1600 Series Printers

Service Manual

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For Type C Printers

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CAUTION

This equipment includes parts and assemblies sensitive to damage from electrostatic discharge. Use caution to prevent damage during all service procedures.

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THERMAL HEAD Cleaning Procedure

IMPORTANT

Clean the THERMAL PRINT HEAD before loading new DONOR SPOOLS or when the THERMAL PRINT HEAD is contaminated or needs repair.

[1] De-energize the printer.

[2] Open and lift the DOOR up.

CAUTION

- Do not touch the DONOR; fingerprints can contaminate the DONOR.
- Do not place the DONOR SPOOL on a dirty area; this can contaminate the DONOR, which can then contaminate the THERMAL HEAD. Place the DONOR SPOOL on a surface that has been recently cleaned. If possible, use the original plastic stands supplied with the DONOR. If the stands are not available, place the DONOR on its end.

[3] To remove the DONOR:

(a) If the DONOR is installed, remove the LOWER SUPPLY SPOOL; handle the LOWER SUPPLY SPOOL by the white plastic ends only.

(b) Wind the loose DONOR on the LOWER TAKE-UP SPOOL for 2 complete wraps.

(c) Remove the TOP TAKE-UP DONOR SPOOL by the white plastic ends.

(d) Place both SPOOLS upward on their ends on a clean surface.

[4] Locate the THERMAL HEAD.

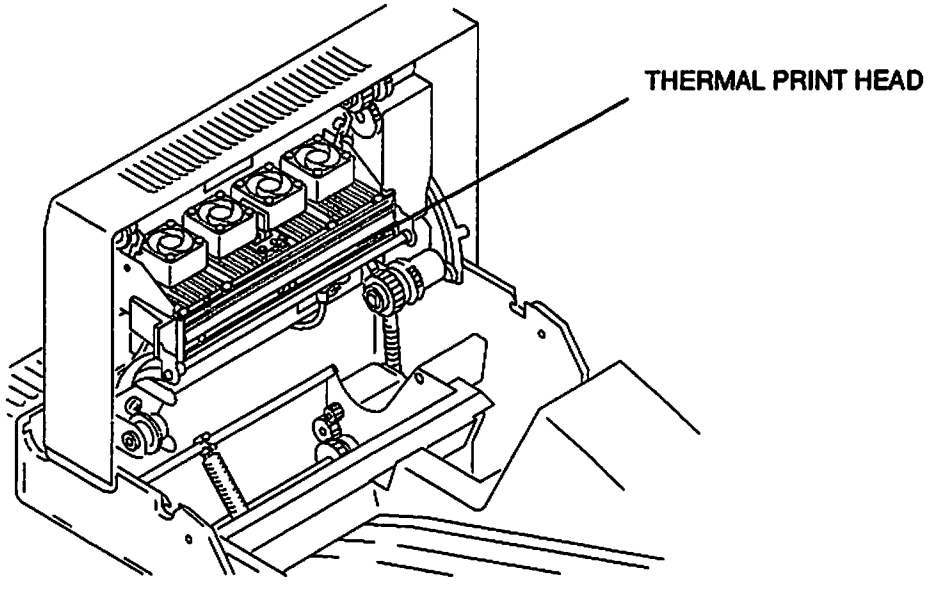

Figure 1 THERMAL HEAD

CAUTION

Do not clean or wipe below the area of the HEATER LINE BEAD (on THERMAL HEAD). This causes permanent damage to the sealant-protecting circuit row, which will cause damage to the THERMAL HEAD.

[5] Locate the HEATER LINE BEAD (on THERMAL HEAD) and sealant protecting circuit row locations.

CAUTION

- Do not use a cotton or cotton-blend CLOTH to clean the THERMAL HEAD. Use only a 100% polyester or 100% nylon CLOTH. Lint-free CLOTHS composed of 100% polyester are sold through laboratory supply distributors for clean-room use. Not all clean-room CLOTHS are 100% polyester, check the label carefully. 100% nylon is an acceptable cleaning CLOTH alternative. In all cases, check that the CLOTH is moistened with either distilled or deionized water or isopropanol. **DO NOT USE A DRY CLOTH.**
- Do not use tap water.

[6] Use distilled water or deionized water on a clean lint-free CLOTH (100% polyester or 100% nylon, not cotton, cotton blend, or paper products).

NOTE

- Distilled water can be purchased in most areas at grocery or drug stores.
- Deionized water is more difficult to obtain but is the preferred water.
- Deionized water does not have chlorine, which makes it more susceptible to bacteria growth and reduces the time the water can be stored and still be acceptable for cleaning use.
- Distilled water is an acceptable alternative.

CAUTION

Do not touch the sealant-protecting circuit row.

[7] Move the moist cloth back and forth along the complete length of the HEATER LINE BEAD (on THERMAL HEAD).

[8] Do the previous step again and wait approximately and no less than 2 minutes for the HEATER LINE BEAD (on THERMAL HEAD) to dry completely.

CAUTION

Use ISOPROPYL ALCOHOL with at least 70% or greater isopropanol with the remaining percentage consisting of deionized water only. No other additives are acceptable.

[9] Use a solution of ISOPROPYL ALCOHOL (the ISOPROPYL ALCOHOL must have at least 70% or greater isopropanol with the remaining percentage consisting of deionized water only) to moisten a clean lint-free CLOTH.

[10] Move the moist cloth back and forth along the complete length of the HEATER LINE BEAD (on THERMAL HEAD) and wait approximately and no less than 2 minutes for the HEATER LINE BEAD (on THERMAL BEAD) to dry completely.

CAUTION

- Do not touch the DONOR; fingerprints can contaminate the DONOR and cause print artifacts.
- Do not place the DONOR SPOOL on a dirty area; this can contaminate the THERMAL HEAD; place the DONOR SPOOL on a surface that has been recently cleaned.
- If you accidentally touch the unused portion of the DONOR after installing the SPOOLS, advance the DONOR to the center of the unused magenta section by winding the DONOR onto the TOP SPOOL.

[11] Install the LOWER and TOP DONOR SPOOLS. If you removed a partially used DONOR, wind the 2 complete wraps of the used DONOR onto the TOP SPOOL.

[12] Close the DOOR.

[13] Energize the printer.

IMPORTANT

To make an ENGINE test print, the S1 SWITCH on the CONTROLLER CIRCUIT BOARD must be in the engine mode. After making the ENGINE test print, de-energize the printer and set the S1 SWITCH on the CONTROLLER BOARD to EXT.

[14] Make an ENGINE test print to check that the artifact is removed.

(a) If the same artifact is still present, do this complete procedure again. It might be necessary to do this procedure a few times. The artifact might be caused by a THERMAL HEAD that has scratches, or other part malfunctions.

(b) If the original lines are removed and new lines are present, this indicates that the THERMAL HEAD is <u>not</u> the cause of the artifact. Additional cleaning might be necessary.

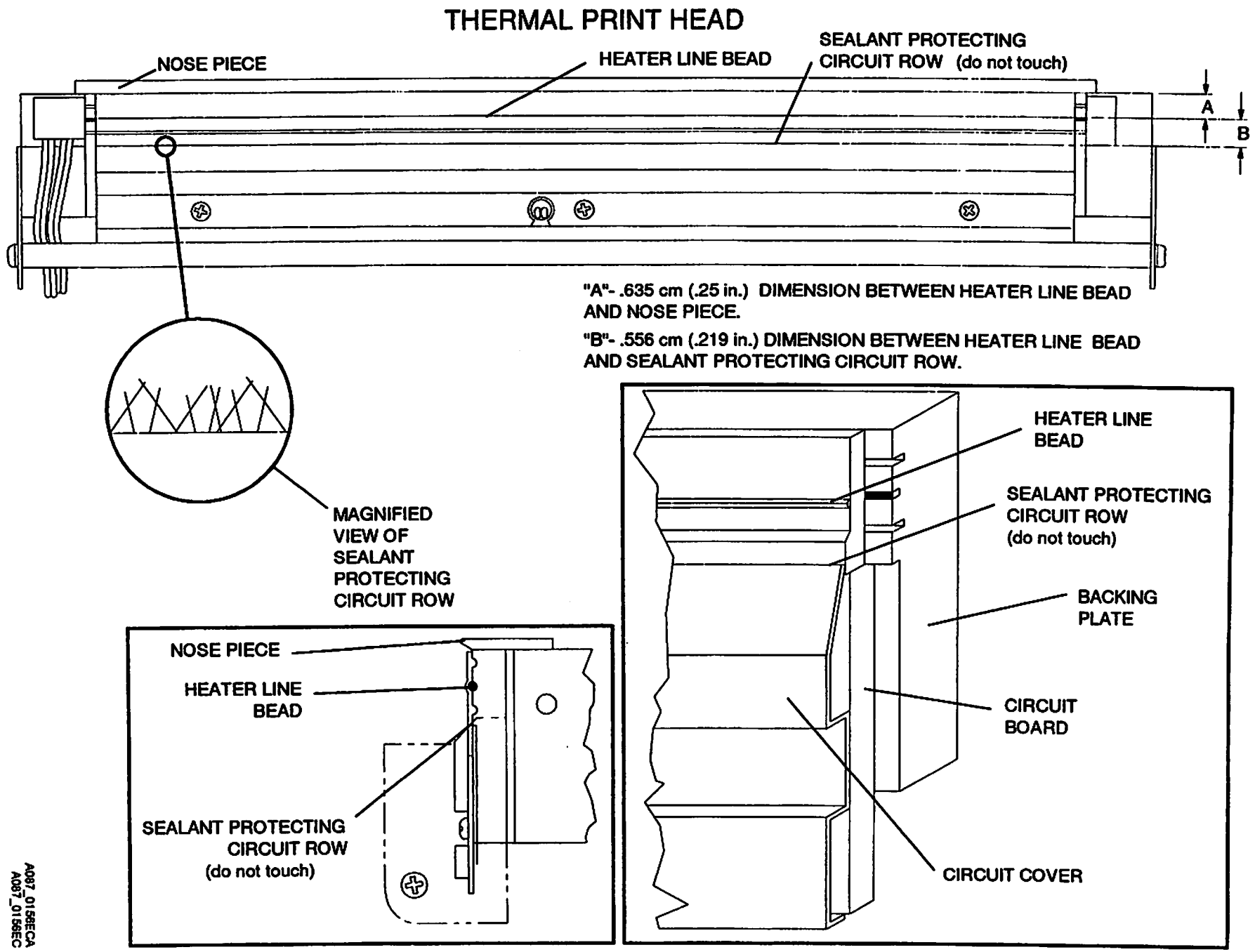
THERMAL PRINT HEAD
NOSE PIECE
HEATER LINE BEAD
SEALANT PROTECTING CIRCUIT ROW (do not touch)
A
B
"A"- .635 cm (.25 in.) DIMENSION BETWEEN HEATER LINE BEAD AND NOSE PIECE.
"B"- .556 cm (.219 in.) DIMENSION BETWEEN HEATER LINE BEAD AND SEALANT PROTECTING CIRCUIT ROW.
MAGNIFIED VIEW OF SEALANT PROTECTING CIRCUIT ROW
NOSE PIECE
HEATER LINE BEAD
SEALANT PROTECTING CIRCUIT ROW (do not touch)
HEATER LINE BEAD
SEALANT PROTECTING CIRCUIT ROW (do not touch)
BACKING PLATE
CIRCUIT BOARD
CIRCUIT COVER

Figure 2 THERMAL HEAD

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General Information and Supplies

IMPORTANT

Do this procedure when a printer has a continuous problem with visible contaminants. This occurs when lines and dirt spots are visible on the prints and keep changing locations on the prints, even after the printer has been cleaned several times.

CAUTION

It is very important to use the correct supplies in this procedure; if the correct supplies are not used, this might add additional contaminants to the printer.

Supplies

The following supplies are necessary to do this procedure:

- Deionized or Distilled water
  - Use distilled water or deionized water on a clean lint-free CLOTH (100% polyester or 100% nylon, not cotton, cotton blend, or paper products).
  - Deionized water is more difficult to obtain but is the preferred water.
  - Deionized water does not have chlorine, which makes it more susceptible to bacteria growth and reduces the time the water can be stored and still be acceptable for cleaning use.
  - Distilled water can be purchased in most areas at grocery or drug stores.
  - Distilled water is an acceptable alternative.
  - Do not use tap water.
- ISOPROPYL ALCOHOL
  - The ISOPROPYL ALCOHOL must have at least 70% or greater isopropanol with the remaining percentage consisting of deionized water only. No other additives are acceptable.
- Lint-free CLOTH
  - Use only a 100% polyester or 100% nylon CLOTH. Lint-free CLOTHS composed of 100% polyester are sold through laboratory supply distributors for clean-room use.
  - Not all clean-room CLOTHS are 100% polyester, check the label carefully.
  - 100% nylon is an acceptable cleaning CLOTH alternative.
  - Check that the CLOTH is moistened with either distilled or deionized water or isopropanol.
  - Do not use a dry cloth.
  - Do not use a cotton or cotton-blend CLOTH to do this maintenance procedure.

Maintenance Procedure

[1] Do the DOOR COVER removal on page 7-6.

[2] Do the ENCASEMENT removal on page 7-8.

[3] Do the CONTROLLER ENCLOSURE DRAWER ASSEMBLY Access procedure on page 7-25.

[4] Remove the NUT and STRAP holding the TB2 and J2 CONNECTORS to the DRAWER.

[5] Remove the TB2 and J2 CONNECTORS from the POWER SUPPLY.

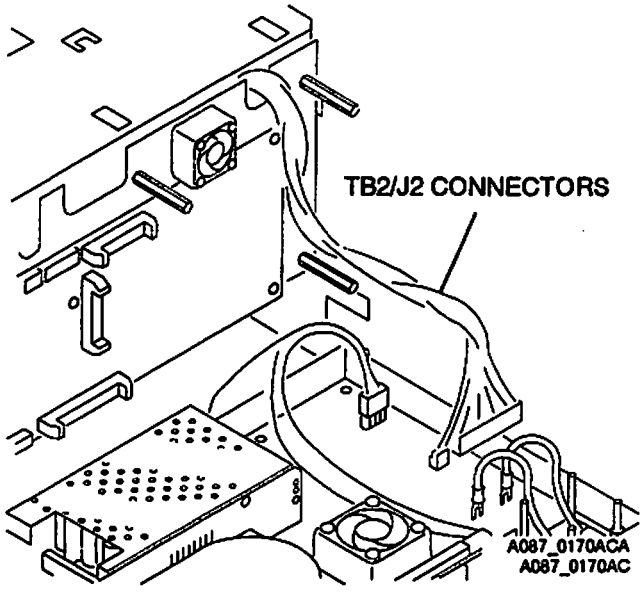

Figure 3 TB2 and J2 CONNECTORS

[6] Remove the DRAWER ASSEMBLY.

[7] Do the ROLLER ASSEMBLY removal on page 7-21.

CAUTION

Read the Supplies list on the previous pages before continuing the procedure; it is very important you use the correct supplies. If the supplies used are not correct, this might add additional contaminants to the printer.

[8] Locate and clean the top of the PRINTER DOOR; use a lint-free CLOTH moistened with ISOPROPYL ALCOHOL.

[9] Open the printer DOOR.

[10] Locate and clean the outside and inside of the LEFT PRINTER SIDE WALL and LEFT RAIL; use a lint-free CLOTH moistened with ISOPROPYL ALCOHOL.

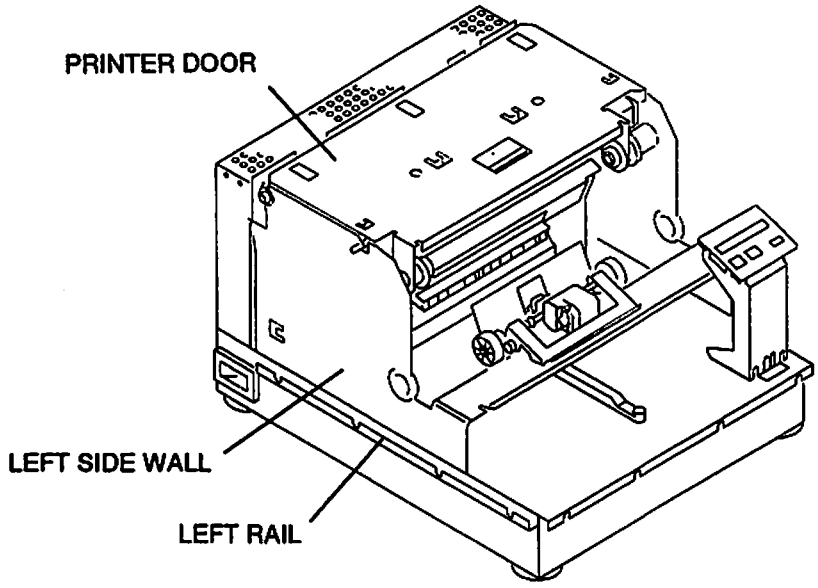

Figure 4 PRINTER DOOR and LEFT SIDE WALL-RAIL

[11] Locate and clean the outside and inside of the RIGHT PRINTER SIDE WALL and RIGHT RAIL; use a lint-free CLOTH moistened with ISOPROPYL ALCOHOL.

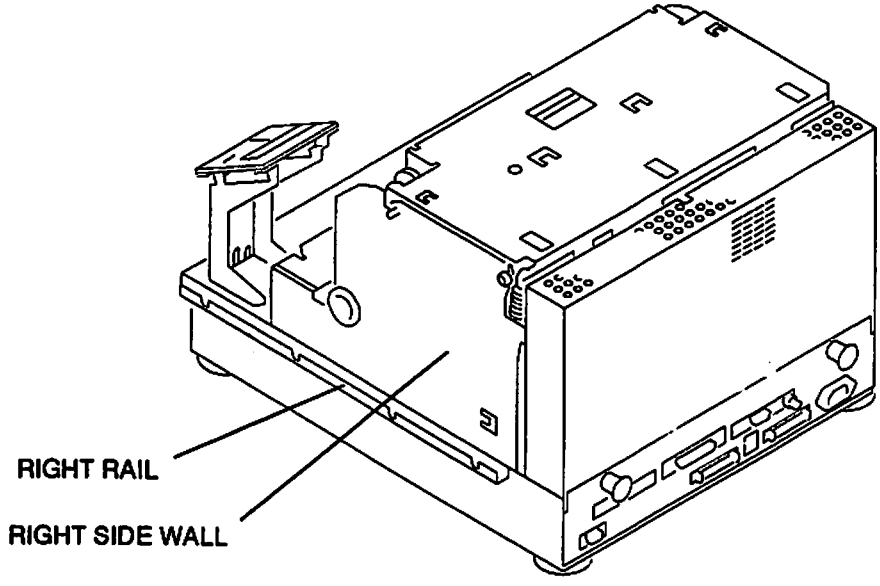

Figure 5 RIGHT PRINTER SIDE WALL-RAIL

[12] Do the THERMAL HEAD Cleaning Procedure on page 2-2.

[13] Locate and clean the DONOR GUIDE BAR; use a lint-free CLOTH moistened with ISOPROPYL ALCOHOL.

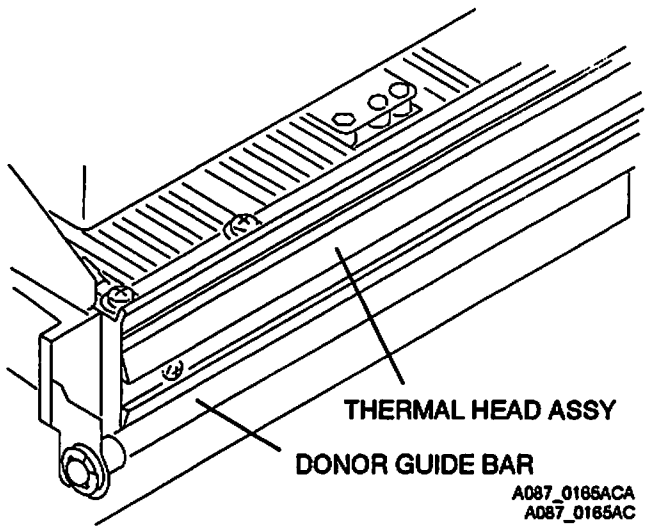

Figure 6 DONOR GUIDE BAR/THERMAL HEAD ASSEMBLY

[14] Clean the other remaining non-electrical parts on the DOOR; use a lint-free CLOTH moistened with ISOPROPYL ALCOHOL.

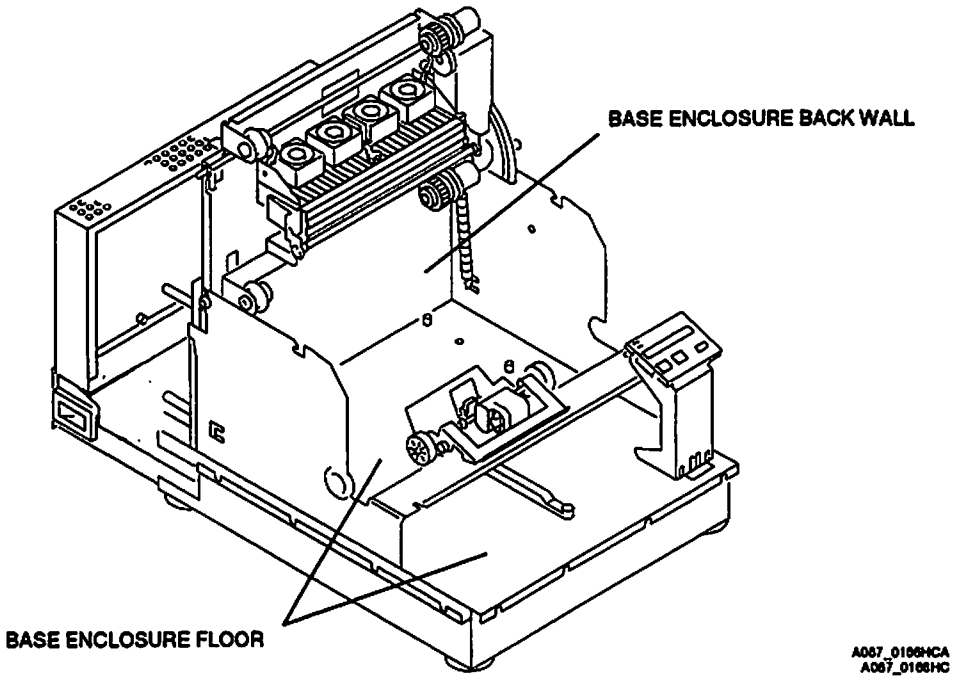

Figure 7 DOOR ASSEMBLY

[15] Locate and clean all metal parts and the PICKER WHEELS on the PICKER ASSEMBLY and BRACKET; use a lint-free CLOTH moistened with ISOPROPYL ALCOHOL.

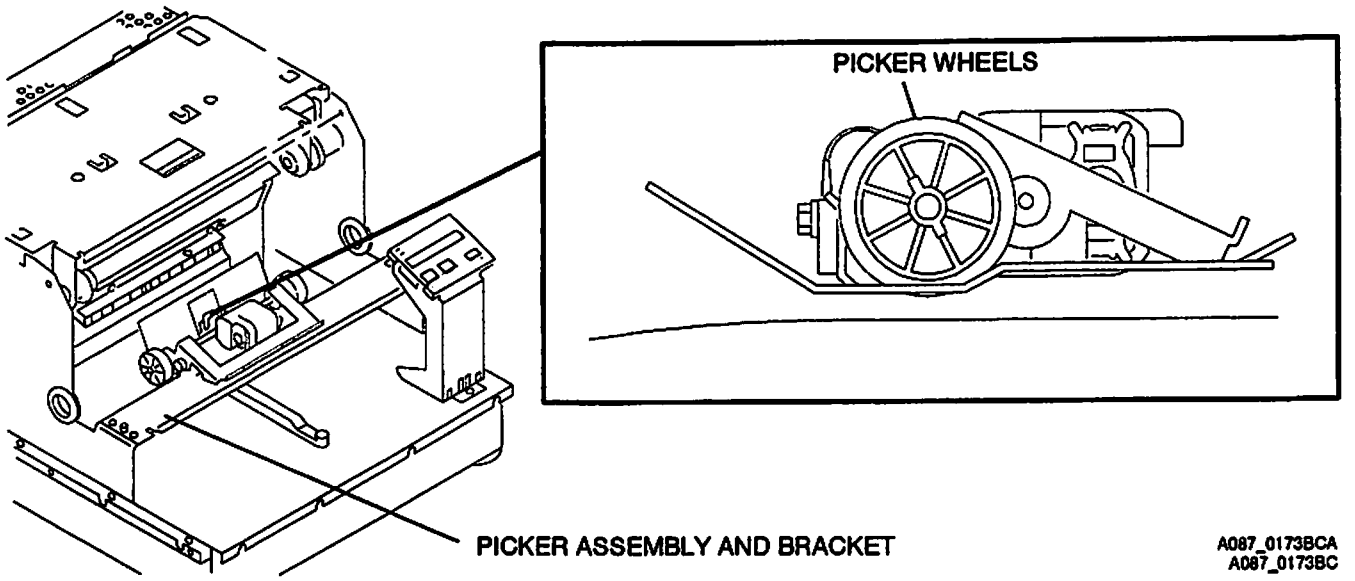

Figure 8 PICKER ASSEMBLY and BRACKET

[16] Locate and clean the BASE ENCLOSURE BACK WALL and FLOOR in the RECEIVER TRAY area; use a lint-free CLOTH moistened with ISOPROPYL ALCOHOL.

WARNING

There are sharp edges on the BASE ENCLOSURE DRAWER CAVITY.

[17] Locate and clean the BASE ENCLOSURE DRAWER CAVITY (sides, top, and bottom); use a lint-free CLOTH moistened with ISOPROPYL ALCOHOL.

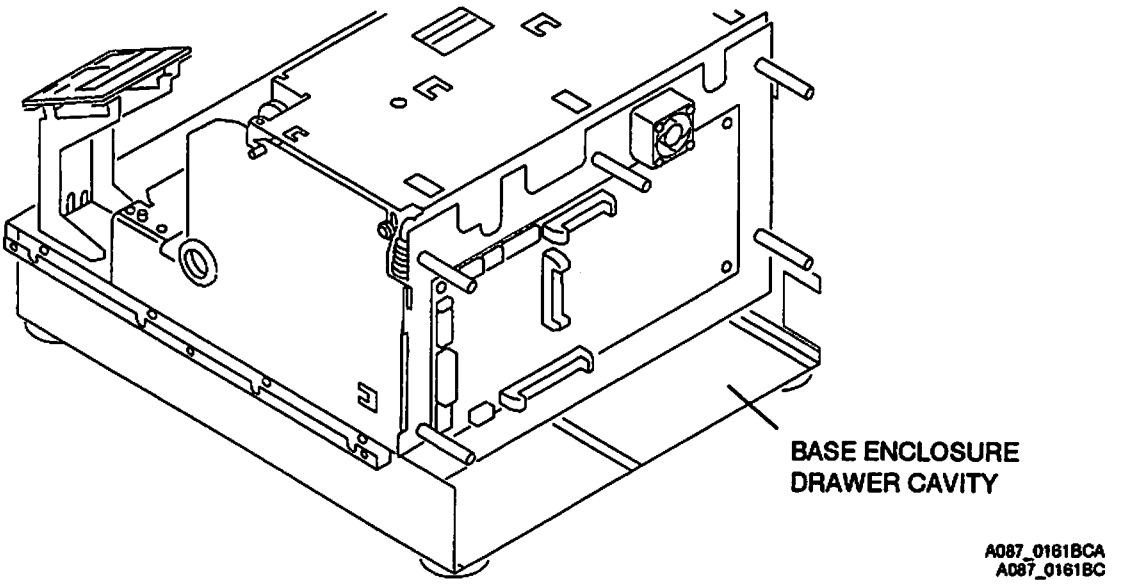

Figure 9 BASE ENCLOSURE DRAWER CAVITY

CAUTION

Do not clean the electrical parts on the DRAWER, CONTROLLER PRINTED CIRCUIT BOARD, or ENCLOSURE ASSEMBLY.

[18] Clean all metal parts on the outside and inside of the DRAWER and CONTROLLER PRINTED CIRCUIT BOARD ENCLOSURE ASSEMBLY; use a lint-free CLOTH moistened with ISOPROPYL ALCOHOL.

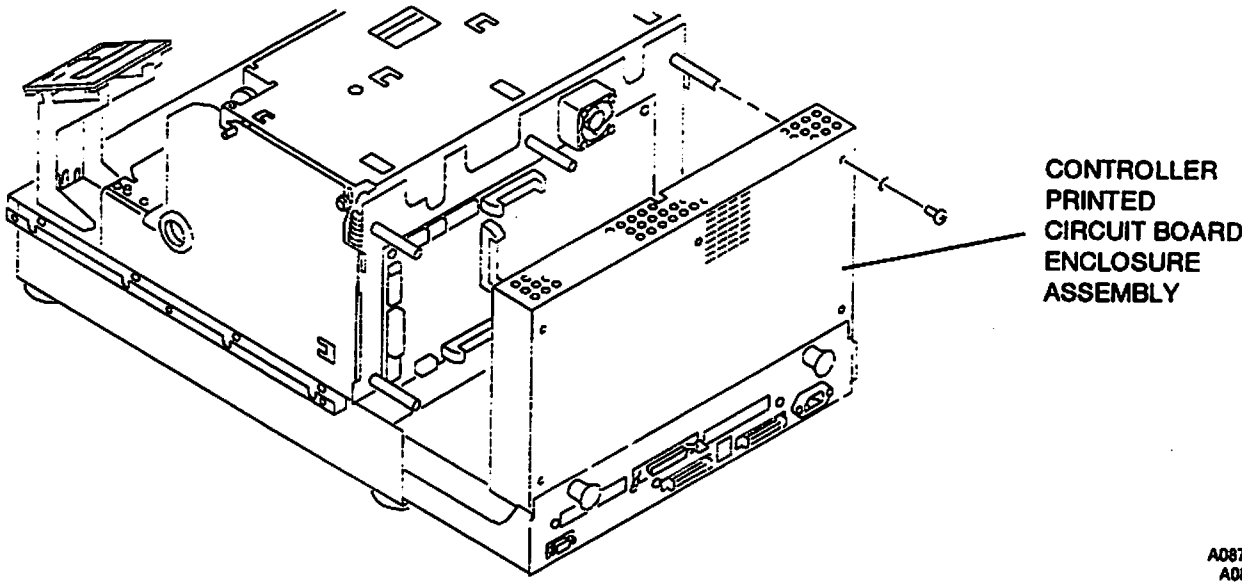

Figure 10 CONTROLLER PRINTED CIRCUIT BOARD ENCLOSURE ASSEMBLY

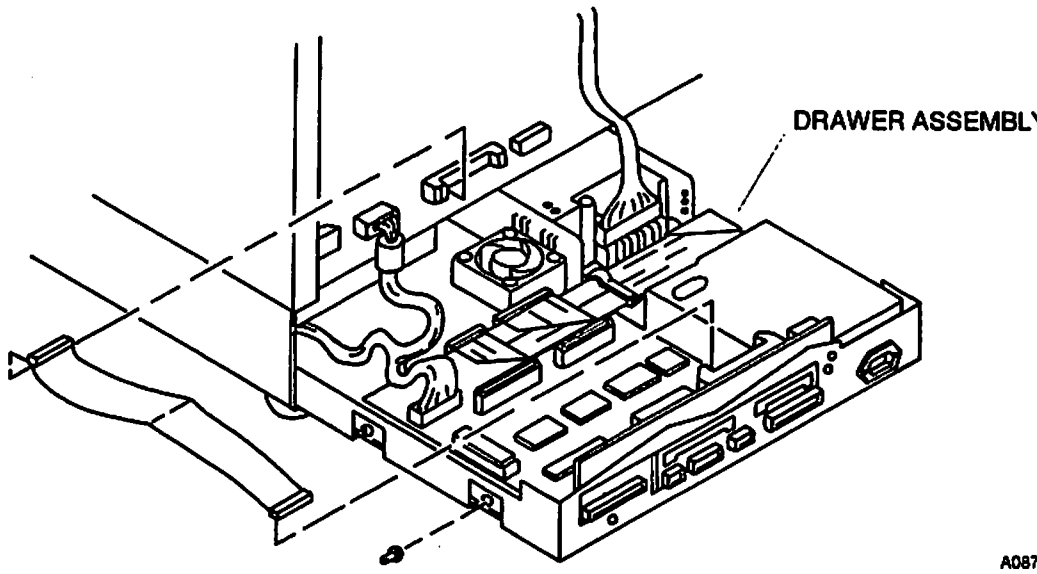

Figure 11 DRAWER ASSEMBLY

CAUTION

- Do not cause damage to any parts on the ROLLER ASSEMBLY (GEARS, SENSORS, HARNESSES).
- Do not cause damage to the LEAD EDGE SENSOR and DONOR SENSOR wires.
- Do not cause damage to any electrical components.

[19] Locate the ROLLER ASSEMBLY.

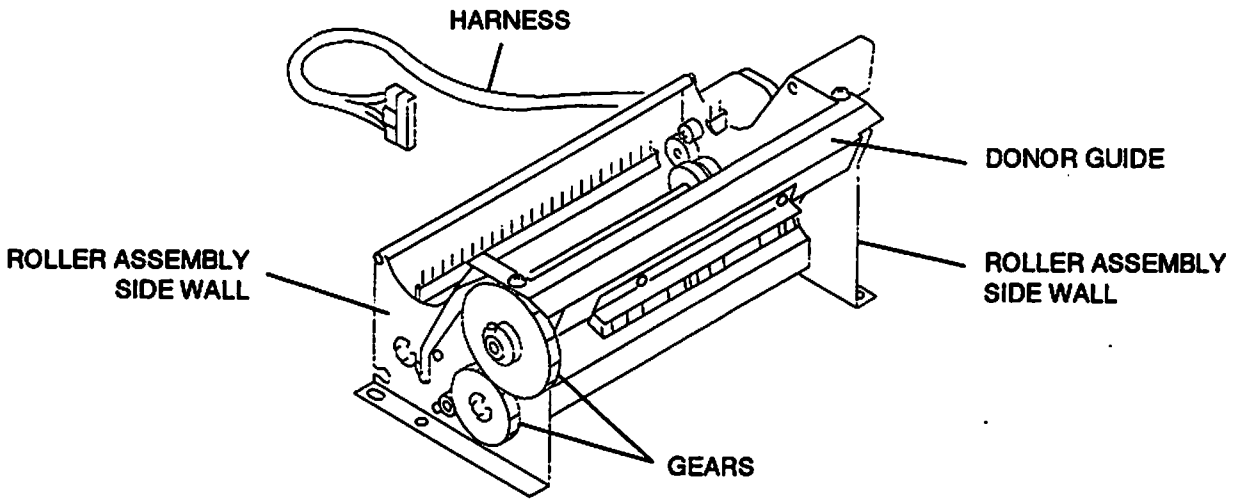

Figure 12 ROLLER ASSEMBLY

[20] Remove the 2 *Phillips* HEAD SCREWS holding the DONOR GUIDE to the ROLLER ASSEMBLY WALLS.

[21] Clean the metal DONOR GUIDE (top and bottom); use a lint-free CLOTH moistened with ISOPROPYL ALCOHOL.

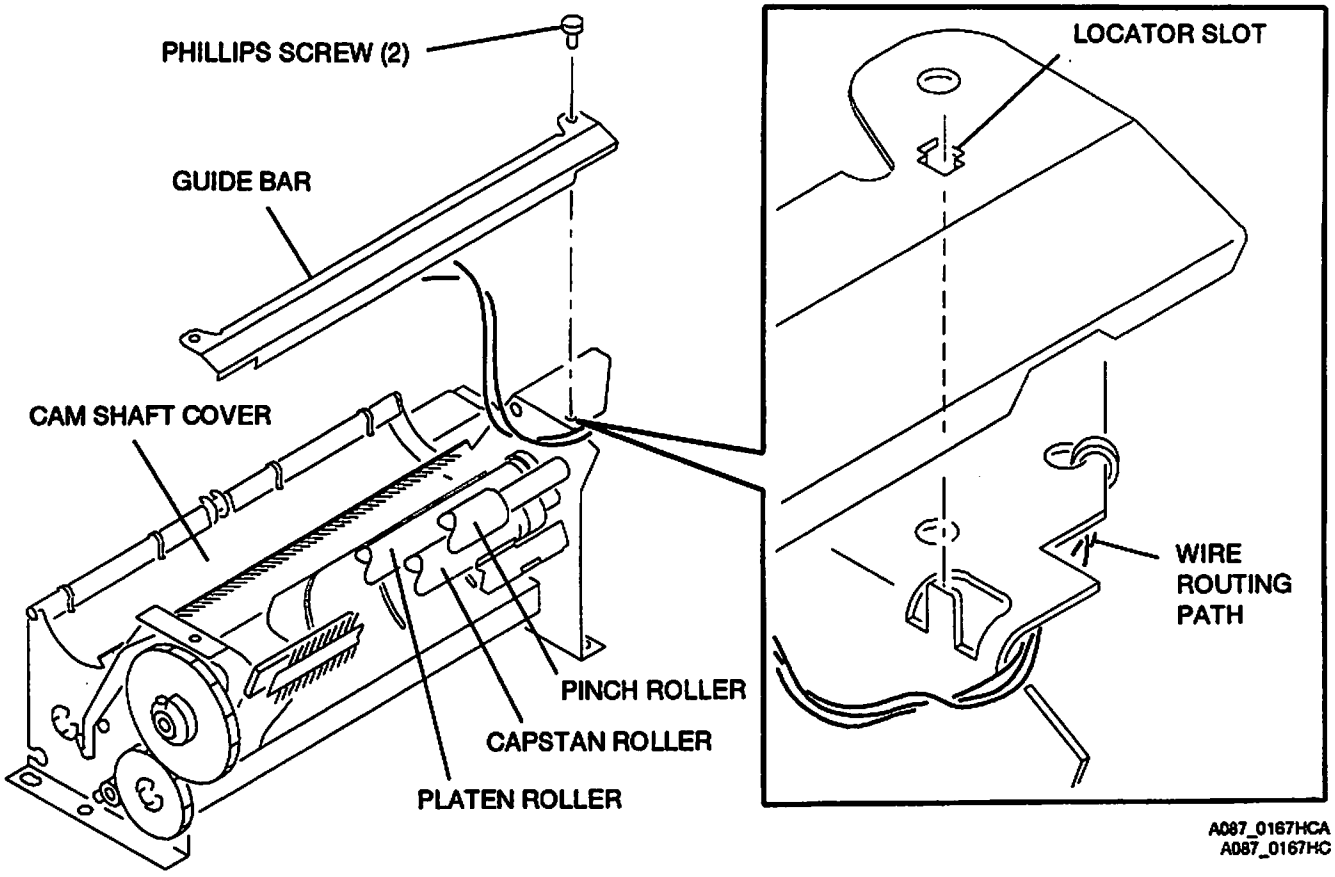

Figure 13 GUIDE BAR, CAM SHAFT COVER, PINCH and PLATEN ROLLERS, Wire Routing, LOCATOR SLOT

CAUTION

Do not touch the LEAD EDGE SENSOR.

[22] Locate the LEAD EDGE SENSOR and wires.

[23] Locate the SIDE WALLS of the ROLLER ASSEMBLY.

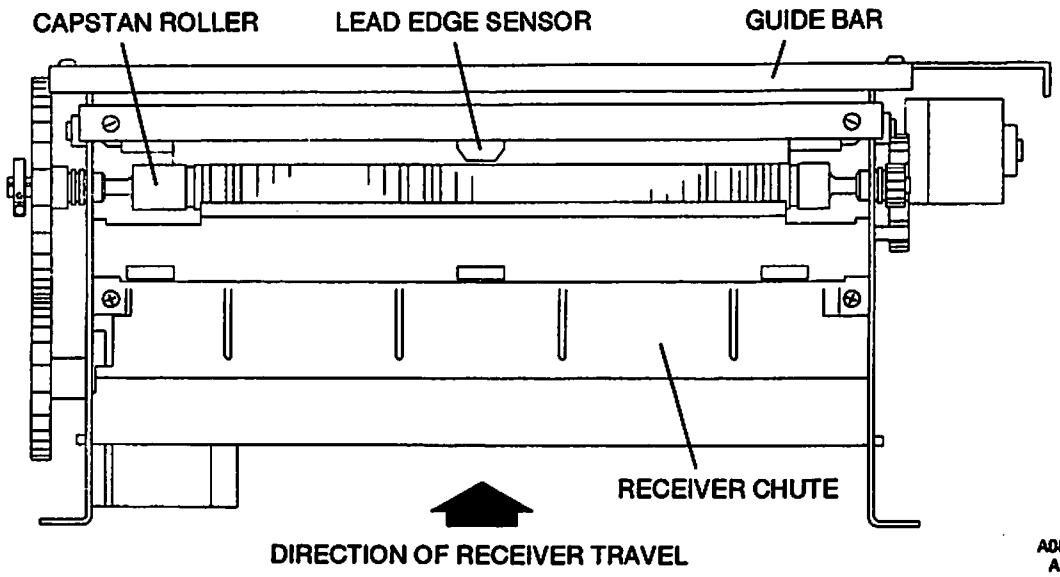

Figure 14 LEAD EDGE SENSOR

CAUTION

Do not touch the GEARS.

[24] Clean the metal surfaces of the ROLLER ASSEMBLY; use a lint-free CLOTH moistened with ISOPROPYL ALCOHOL.

CAUTION

- Do not clean the RUBBER WHEELS on the CAPSTAN ROLLER.
- See the Supplies section at the front of this newsletter to determine the correct water to use.

[25] Locate and clean the CAPSTAN ROLLER and EXIT TRAY SHIELD; use a lint-free CLOTH moistened with **deionized or distilled water.**

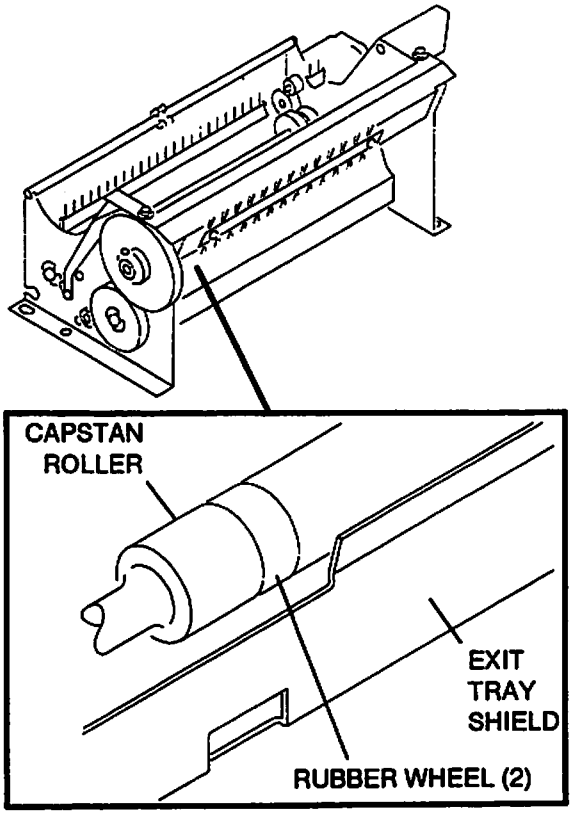

Figure 15 CAPSTAN ROLLER and EXIT TRAY SHIELD

CAUTION

Do not touch the LEAD EDGE SENSOR.

[26] Locate and clean the PINCH and PLATEN ROLLERS; use a lint-free CLOTH moistened with **deionized or distilled water.**

CAUTION

Before installing the DONOR GUIDE, check that the wires are in the correct locations on the right side.

[27] Install the DONOR GUIDE over the 2 LOCATOR TABS.

[28] Check for correct wire routing of the LEAD EDGE SENSOR and DONOR SENSOR HARNESSES.

[29] Install the 2 *Phillips* HEAD SCREWS holding the DONOR GUIDE to the ASSEMBLY WALLS.

CAUTION

Do not make a scratch on the CHUTE clean only in the direction of the RECEIVER travel.

[30] Locate and clean the CHUTE; use a lint-free CLOTH moistened with ISOPROPYL ALCOHOL. Clean only in the direction of the RECEIVER travel.

[31] Locate and clean the CAM SHAFT COVER ASSEMBLY; use a lint-free CLOTH moistened with ISOPROPYL ALCOHOL.

[32] Locate and clean the outside and inside of the DOOR COVER; use a lint-free CLOTH moistened with deionized or distilled water.

[33] Locate and clean the outside and inside of the ENCASEMENT; use a lint-free CLOTH moistened with deionized or distilled water.

[34] Locate and clean the STATIC BRUSHES. Remove any dirt or contaminants.

[35] Check that all printer parts are dry.

[36] Assemble the printer.

[37] Make some test prints to check that the artifacts are removed.

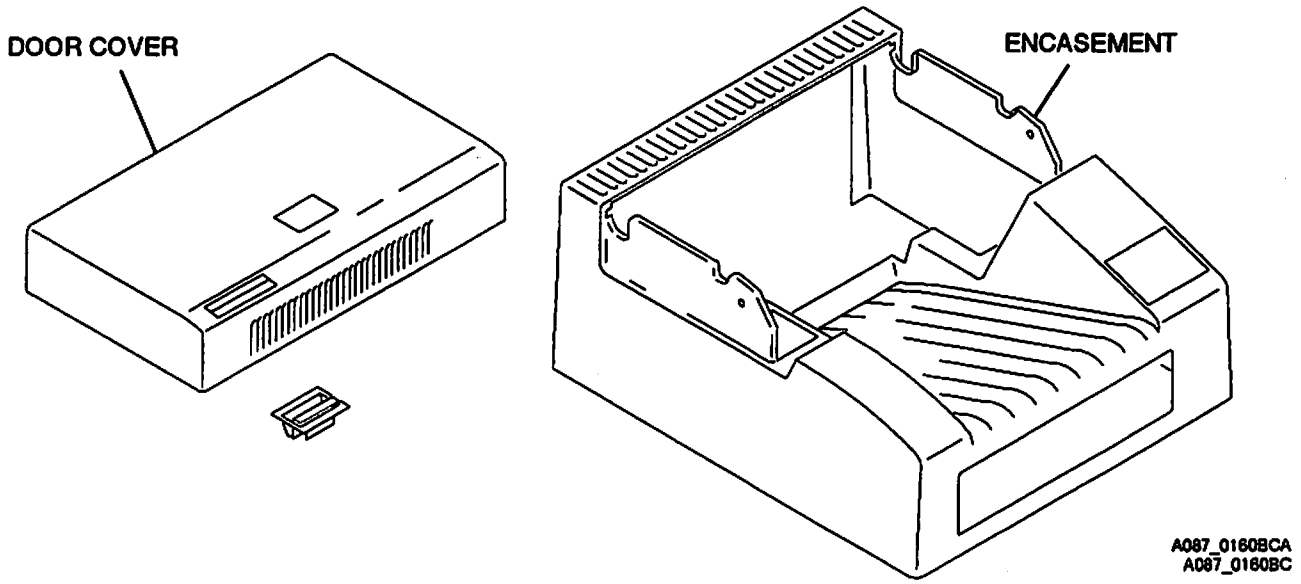

Figure 16 DOOR COVER and ENCASEMENT

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RECEIVER (PAPER or TRANSPARENCY) Installation	3-6
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CAUTION

Do not touch the DONOR; fingerprints can contaminate the DONOR and cause print artifacts.

[1] Remove the DONOR from the package and place the DONOR on its end on a clean surface.

[2] To install the DONOR TAKE-UP ROLL, the notches on the DONOR TAKE-UP ROLL must face to the right of the PRINTER.

[3] Locate the DONOR TAKE-UP SPINDLE.

[4] Insert the DONOR TAKE-UP ROLL on the left side of the DONOR TAKE-UP SPINDLE by moving the DONOR TAKE-UP ROLL to the left and compressing the TAKE-UP SPINDLE SPRING.

[5] With the left DONOR TAKE-UP ROLL SPRING compressed by the DONOR TAKE-UP ROLL, insert the right side of the DONOR TAKE-UP ROLL on the right DONOR TAKE-UP SPINDLE and release.

[6] Locate the DONOR SUPPLY area.

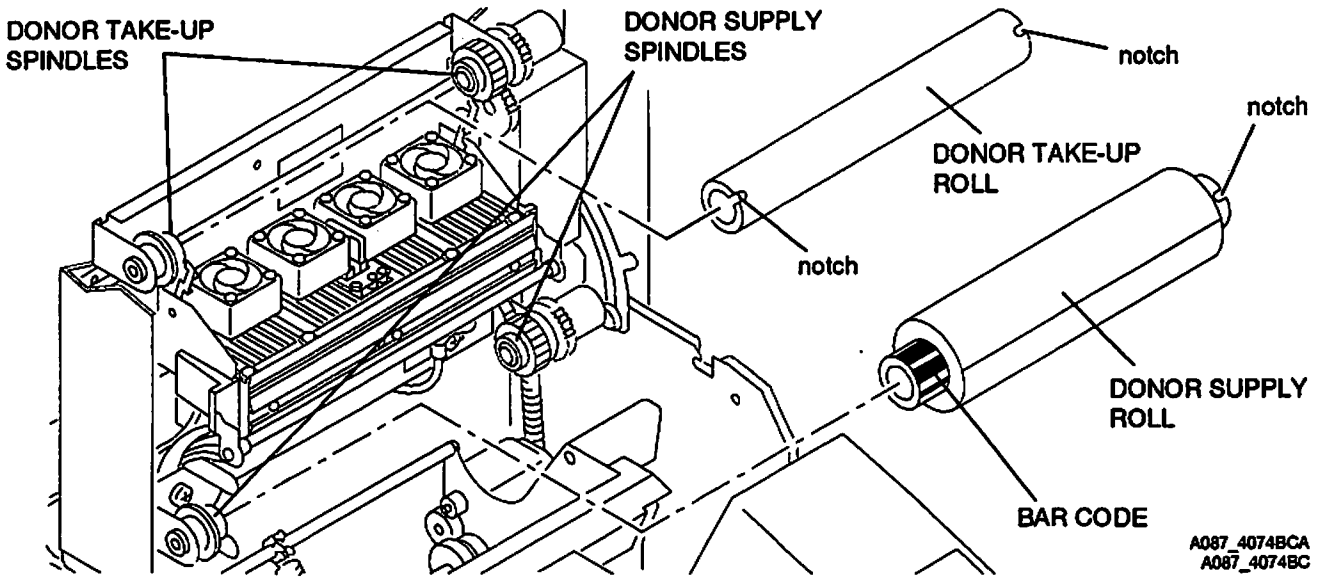

Figure 17 DONOR TAKE-UP Installation

[7] Hold the SUPPLY SPOOL from the plastic ends with the BAR CODE LABEL to the left.

[8] Insert the right end of the DONOR SUPPLY SPOOL on the DRIVE SPINDLE while holding the DONOR SUPPLY SPOOL from the left plastic end.

[9] Compress the LEFT SPINDLE with your left hand.

[10] Place the left end of the DONOR SUPPLY SPOOL on the left LEFT SPINDLE and release the SPINDLE.

[11] Rotate the DONOR SUPPLY SPOOL by either plastic end in the direction of the DOOR until the SUPPLY SPOOL seats onto the SPINDLE TABS.

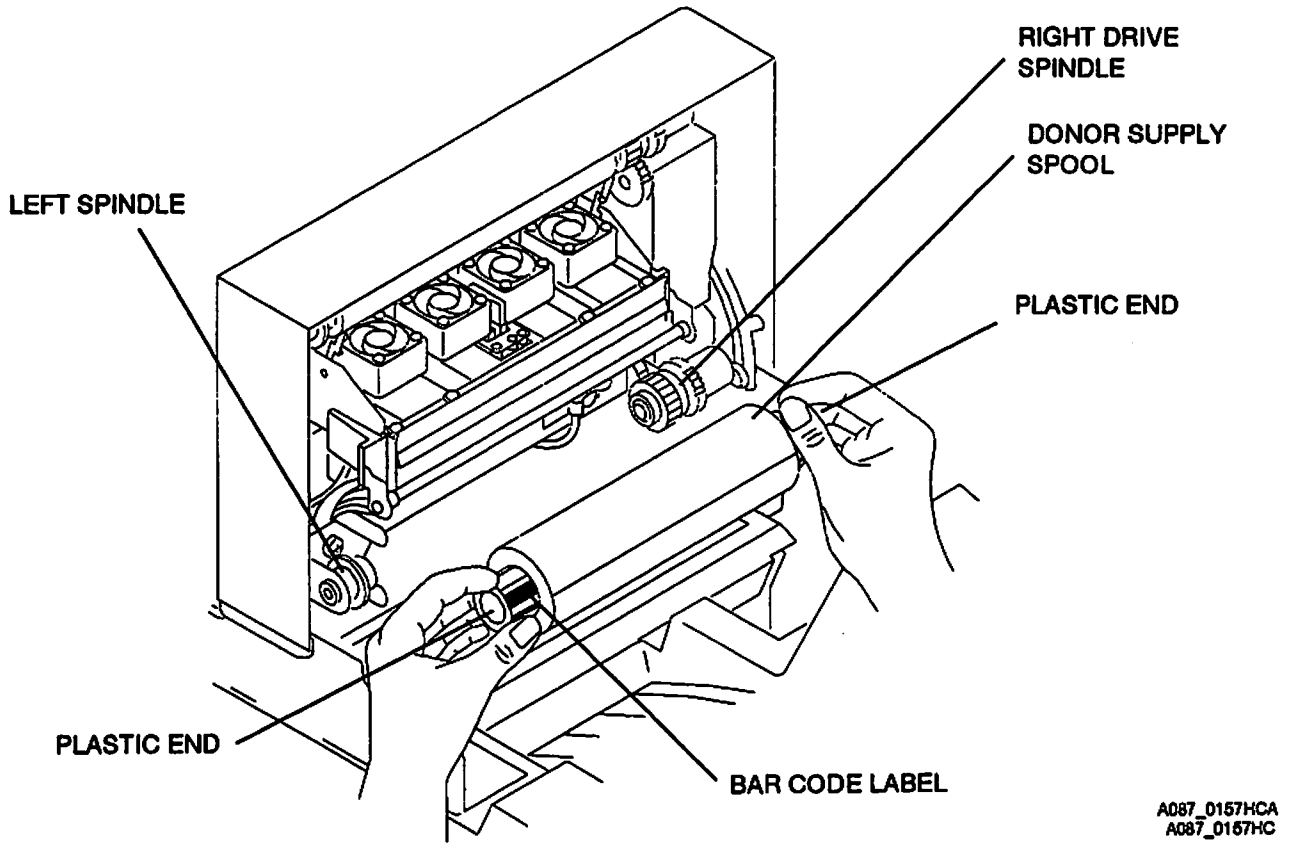

Figure 18 DONOR SUPPLY Installation

CAUTION

Do not touch the DONOR; fingerprints can contaminate the DONOR and cause print artifacts.

[12] Unwind the DONOR from the DONOR SUPPLY ROLL.

[13] Locate and remove the tape covering the ADHESIVE STRIP on the DONOR.

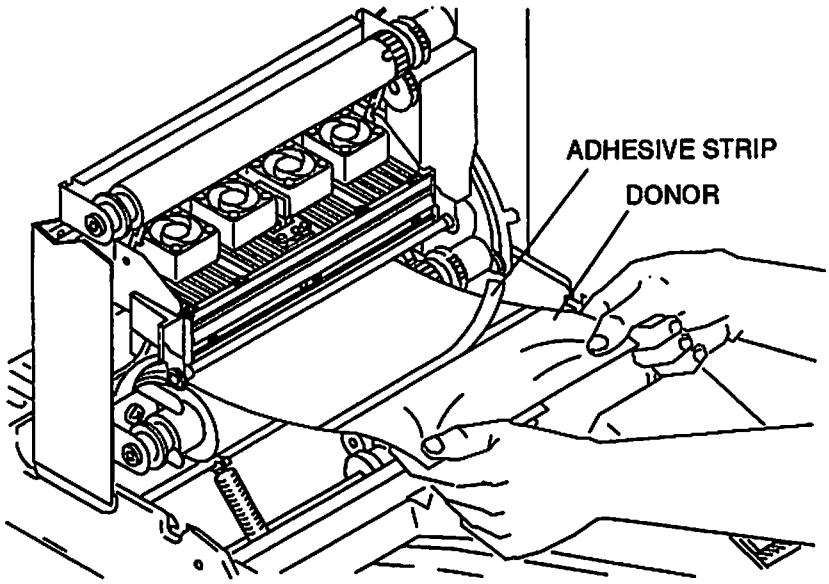

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Figure 19 Removing ADHESIVE STRIP

[14] Hold the DONOR up and place the ADHESIVE STRIP in the center of the DONOR TAKE-UP ROLL; check that the ADHESIVE STRIP is in place on the DONOR TAKE-UP ROLL.

[15] Check that the adhesive strip is correctly adhered to the DONOR TAKE-UP SPOOL by sliding your finger across the DONOR TAKE-UP SPOOL over the ADHESIVE STRIP from left to right.

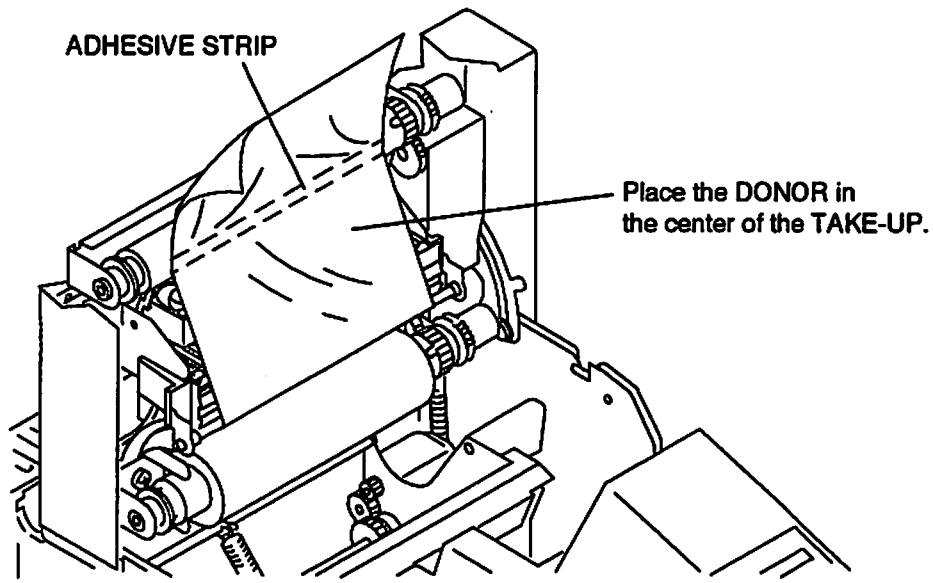

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Figure 20 Connecting DONOR to DONOR TAKE-UP SPOOL

[16] Rotate the DONOR TAKE-UP SPOOL 2 complete rotations to the magenta patch to correctly wrap the DONOR on the DONOR TAKE-UP SPOOL. Check that the DONOR EMITTERS are behind the magenta patch.

[17] Close the DONOR DOOR.

IMPORTANT

Always clean the THERMAL HEAD after removing or installing DONOR.

[18] Check for correct operation.

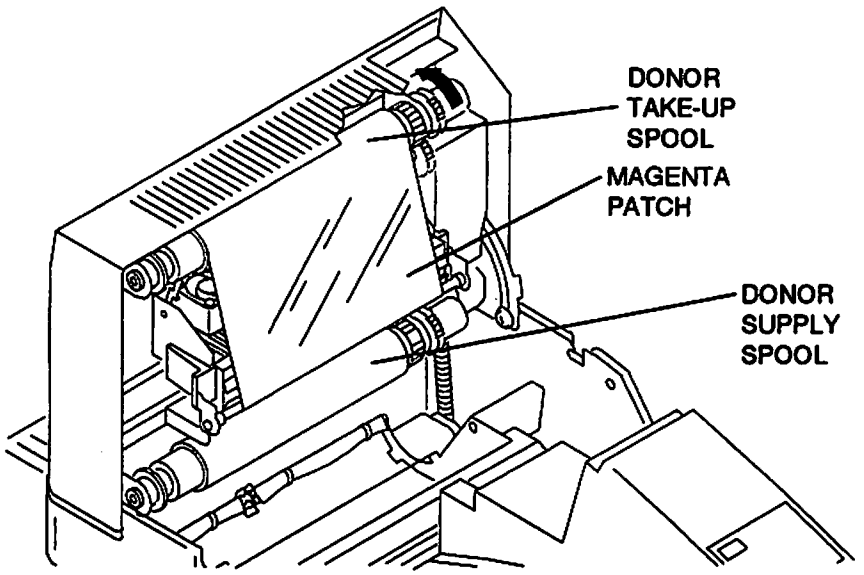

Figure 21 Connecting DONOR to DONOR TAKE-UP SPOOL Magenta Patch

RECEIVER (PAPER or TRANSPARENCY) Installation

CAUTION

- Do not place more than 100 sheets of RECEIVER in the TRAY.
- Check that the RECEIVER installed matches the TRAY size selected.

[1] Remove the TRAY COVER.

[2] If necessary, remove and discard the BLUE BOARD from the EMPTY TRAY.

[3] Remove the new RECEIVER BAG from the BOX.

[4] Remove the RECEIVER (PAPER or TRANSPARENCY) from the BAG.

CAUTION

Do not remove the BLUE BOARDS.

[5] Pick the RECEIVER up by the ends, with the BLUE BOARDS on the top and bottom of the RECEIVER.

[6] If loading paper (not TRANSPARENCY), check that the side of the RECEIVER with the manufacturer's printing faces up.

NOTE

For loading TRANSPARENCY only: Check that the notches are in the right end corner. Observe the notches for a TRANSPARENCY.

IMPORTANT

Check that the BLUE BOARD is installed under the RECEIVER in the bottom of the TRAY. If the BLUE BOARD is not installed, this might cause a picking malfunction.

[7] Slide the RECEIVERS into the TRAY in between the SIDE RAILS. Check that the stack is under both CORNER NAILS.

[8] Remove ONLY the top BLUE BOARD. Do NOT remove the bottom BLUE BOARD.

[9] Close the TRAY COVER.

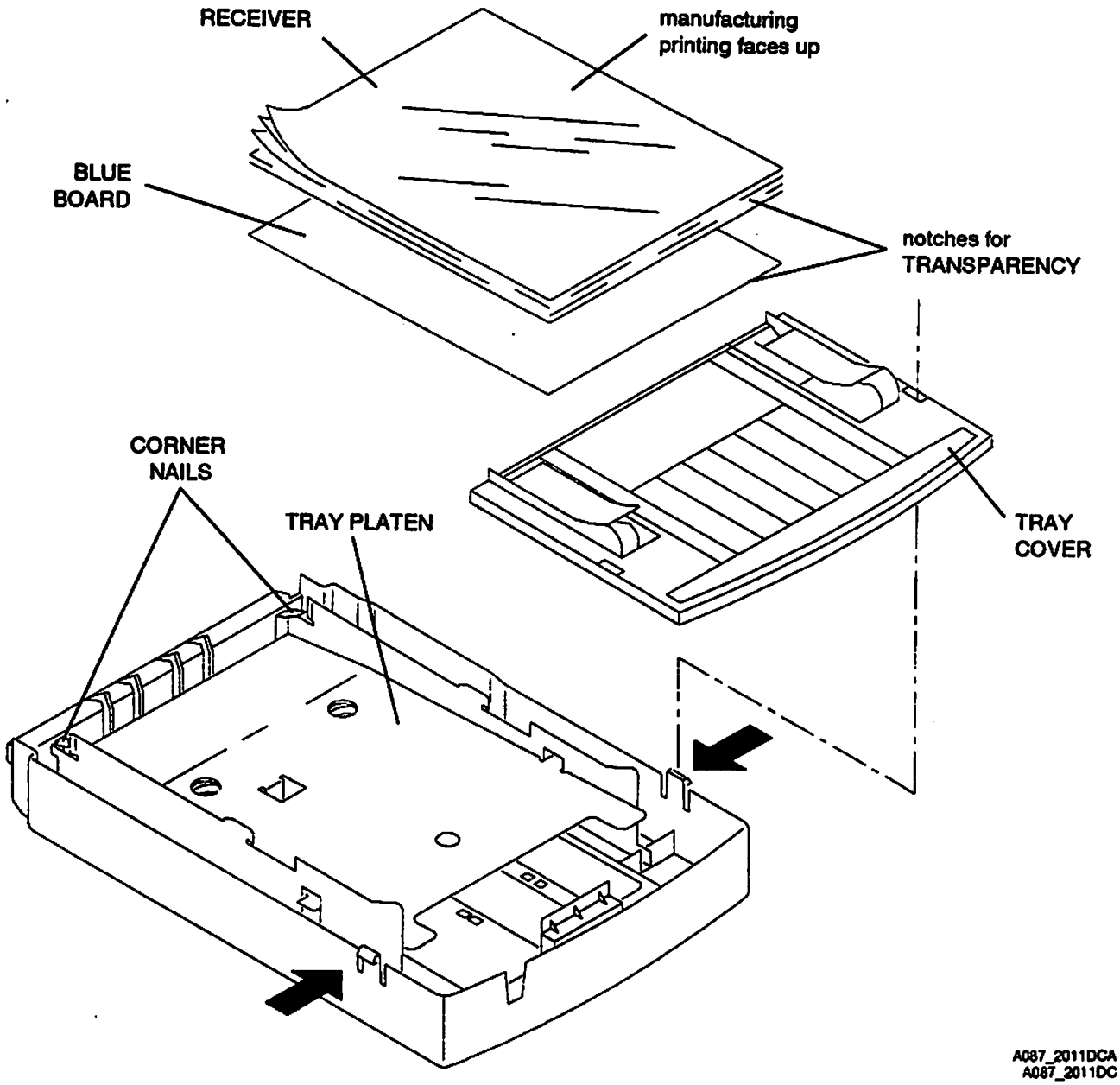

Figure 22 A and A4 Size Tray

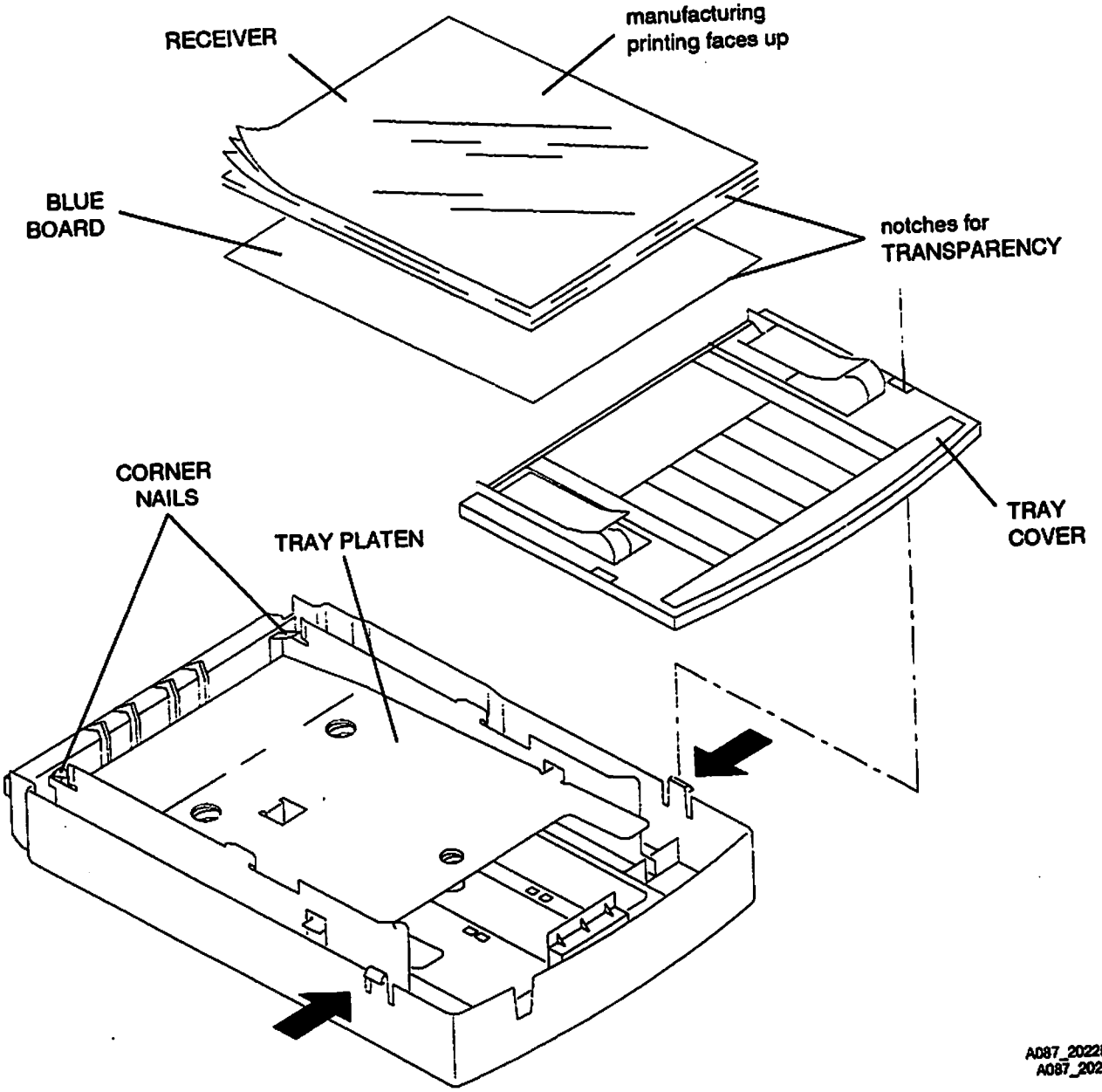

Figure 23 LW Size Tray

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There are 2 types of paper jams, a PICKER jam, or a PINCH jam.

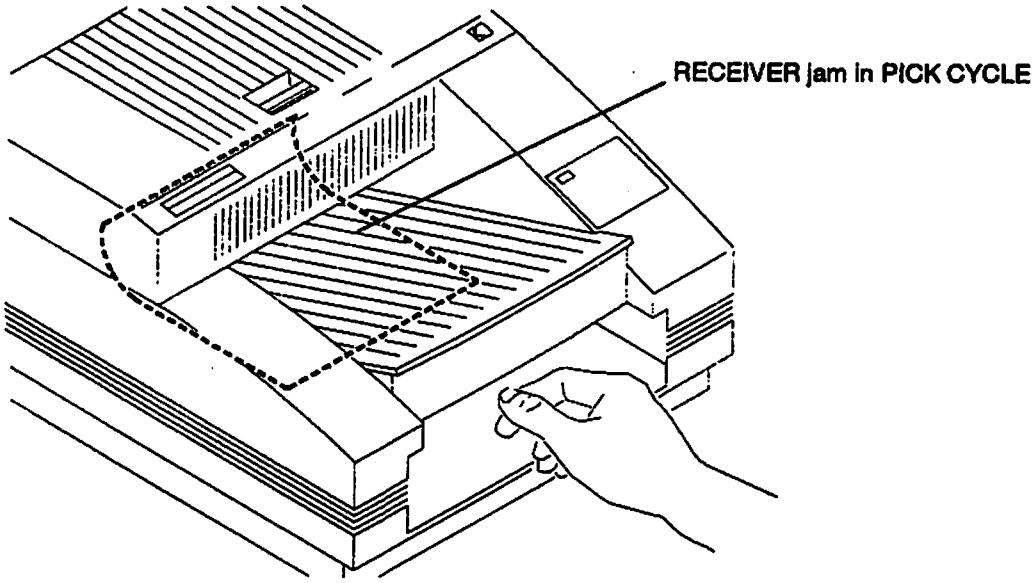

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Figure 25 RECEIVER JAM in Pick Cycle

[1] Open the DOOR.

[2] Check for paper in the ROLLER ASSEMBLY.

CAUTION

When removing a RECEIVER that has caused a jam in the ROLLER ASSEMBLY, do not cause damage to the KICKERS/RUBBER WHEELS.

[3] If the paper is in the PINCH ROLLER, remove it from the top of the ROLLER ASSEMBLY.

[4] If the paper is in the CHUTE or the TRAY, remove the TRAY and carefully place your hand inside the TRAY SLOT and remove the jam.

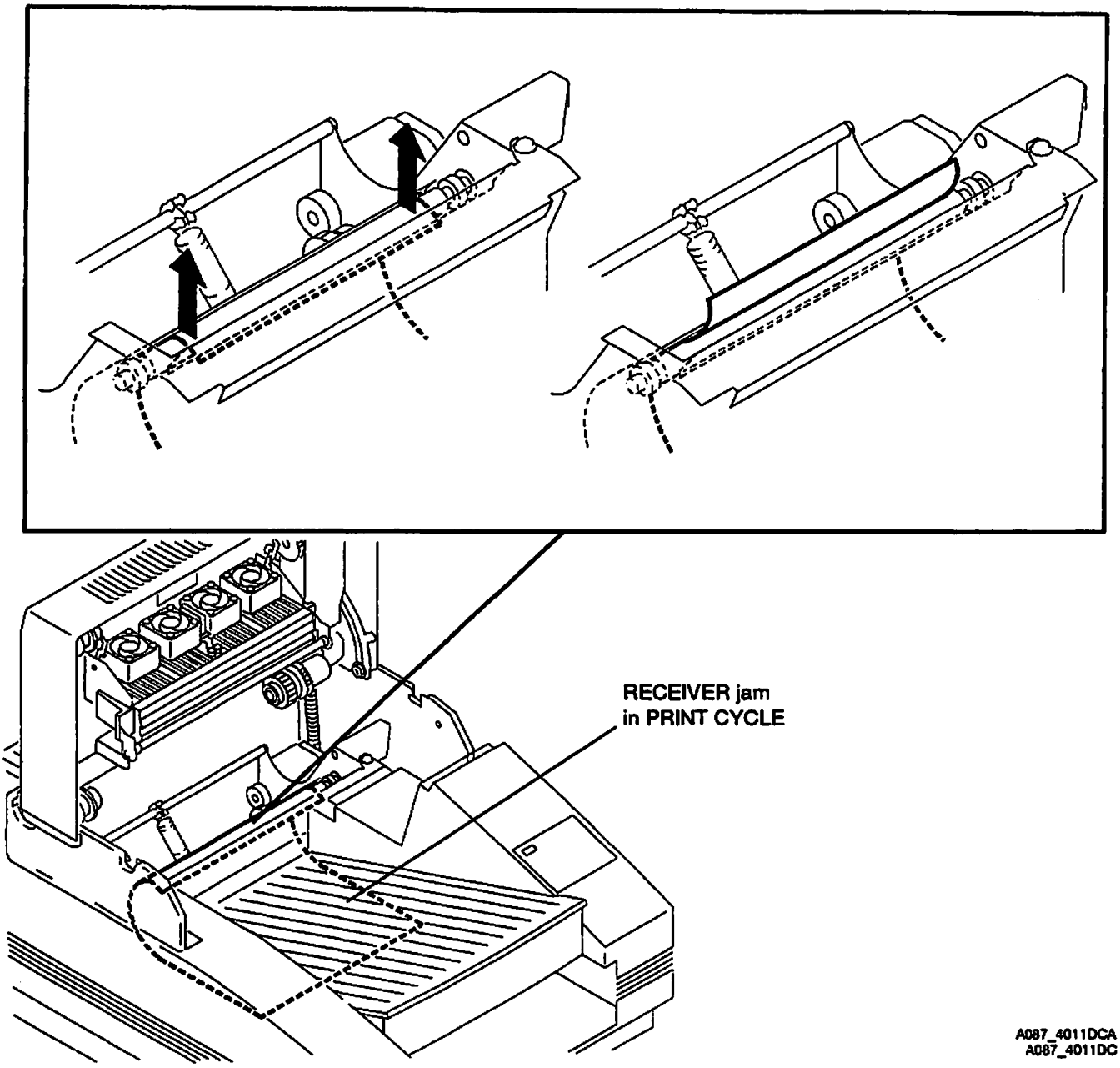

Figure 26 RECEIVER JAM in Print Cycle

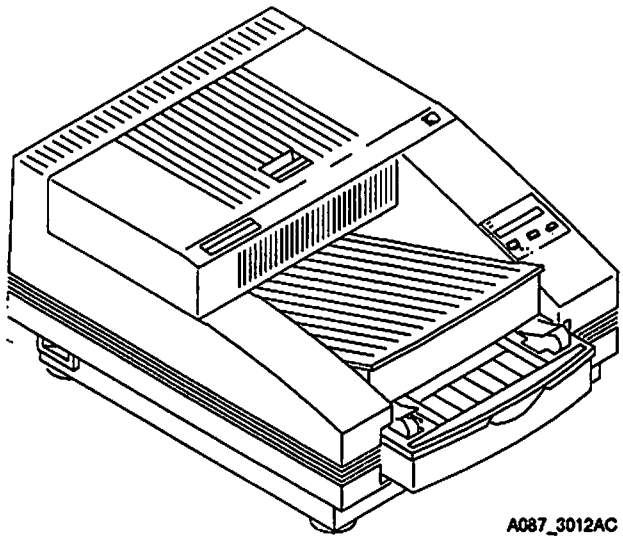

Figure 27

- DOOR COVER
  - COVER over the DOOR ASSEMBLY; holds the DOOR LATCH in the correct position, acts as a safety COVER, and protects the DOOR ASSEMBLY from dirt or dust.
- ENCASEMENT
  - COVER and the EXIT TRAY, provides dust/dirt protection, a deposit TRAY for completed prints, and a safety cover.

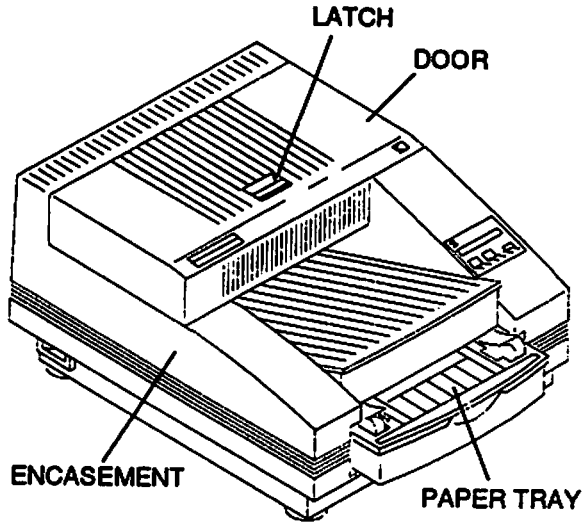

Figure 28

- RECEIVER TRAY (PAPER/TRANSPARENCY)
  - Holds up to 100 sheets of RECEIVER and acts as the RECEIVER supply.
- TRAY CODE LABELS
  - Reflective LABELS installed on the side of the TRAY that interface with the TRAY SENSOR (s) that determines the TRAY size. See the list below.

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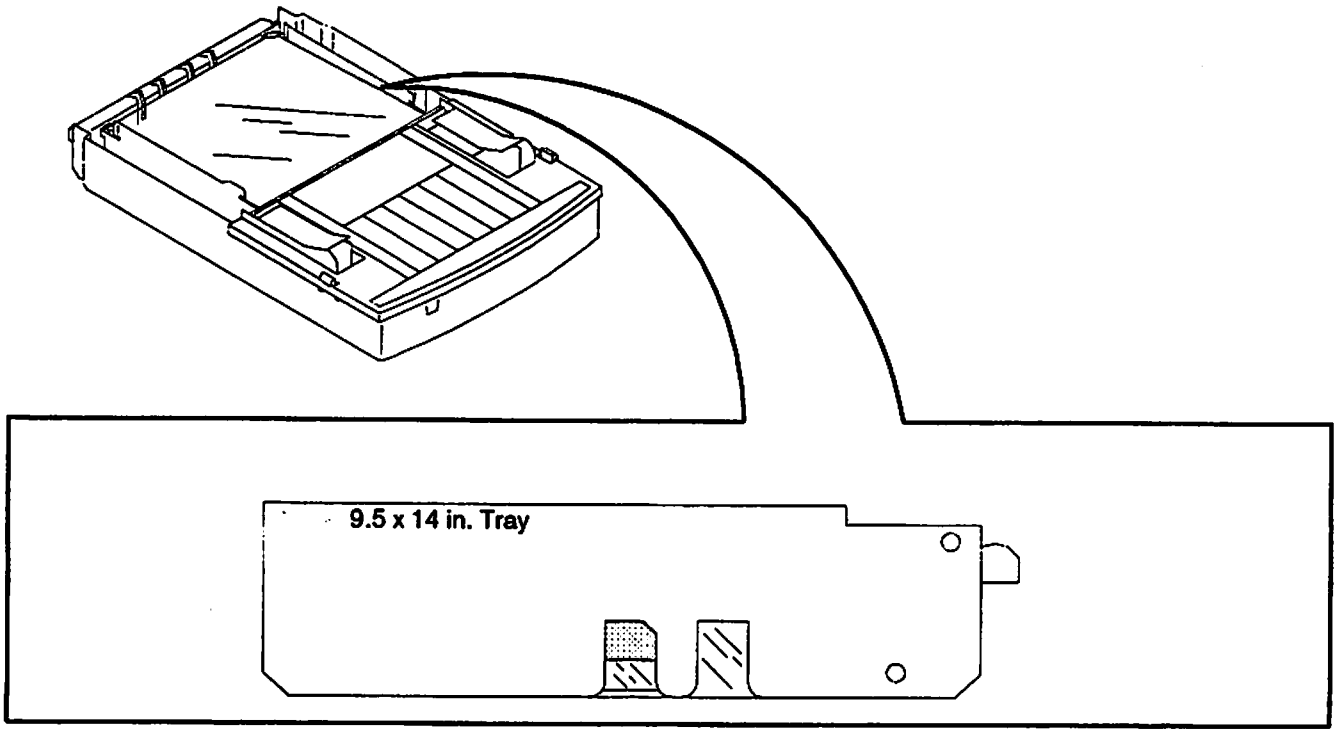

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Figure 30

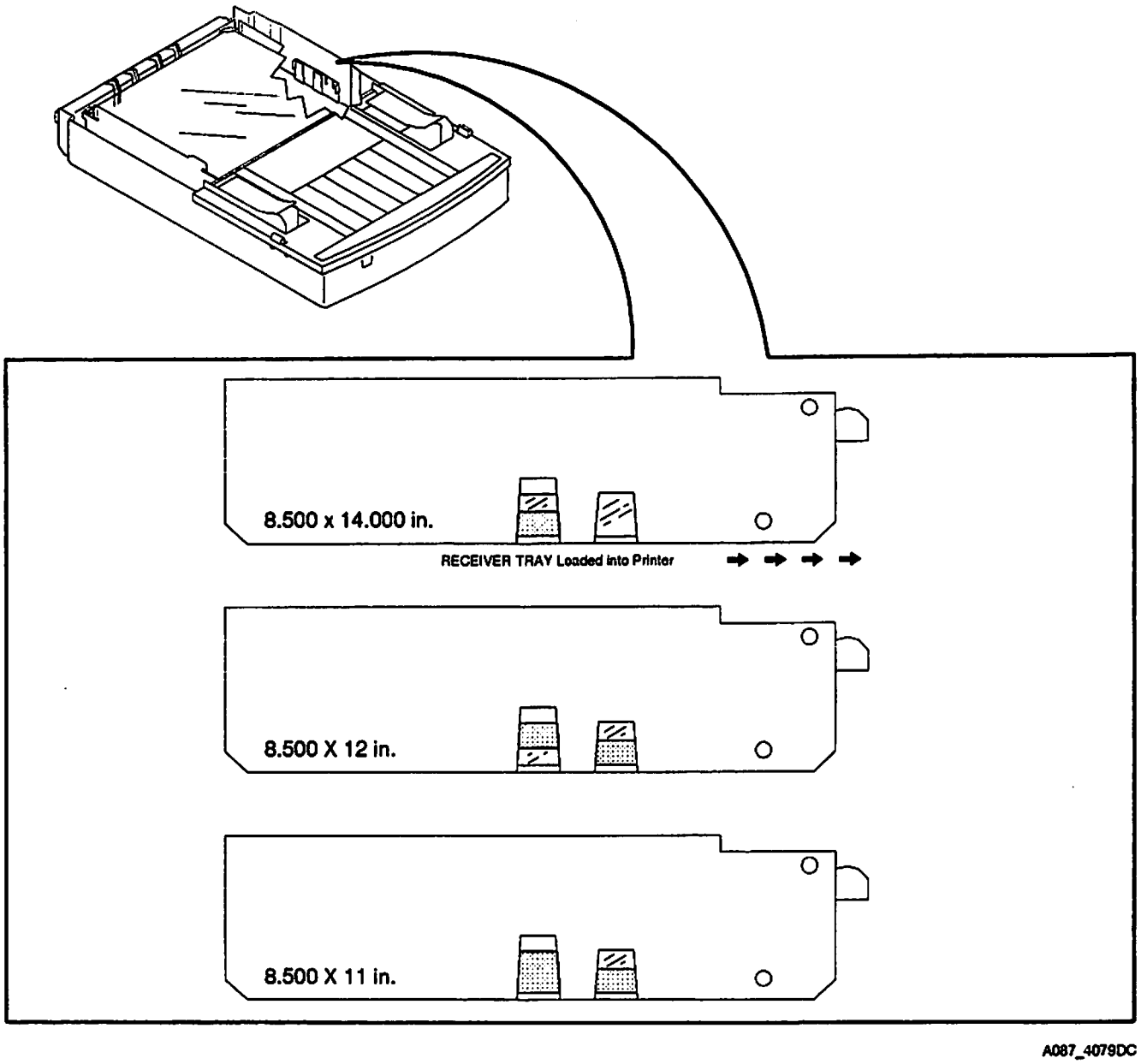


Figure 31 A SIZE UNI ADJUSTABLE TRAY RECEIVER Sizes

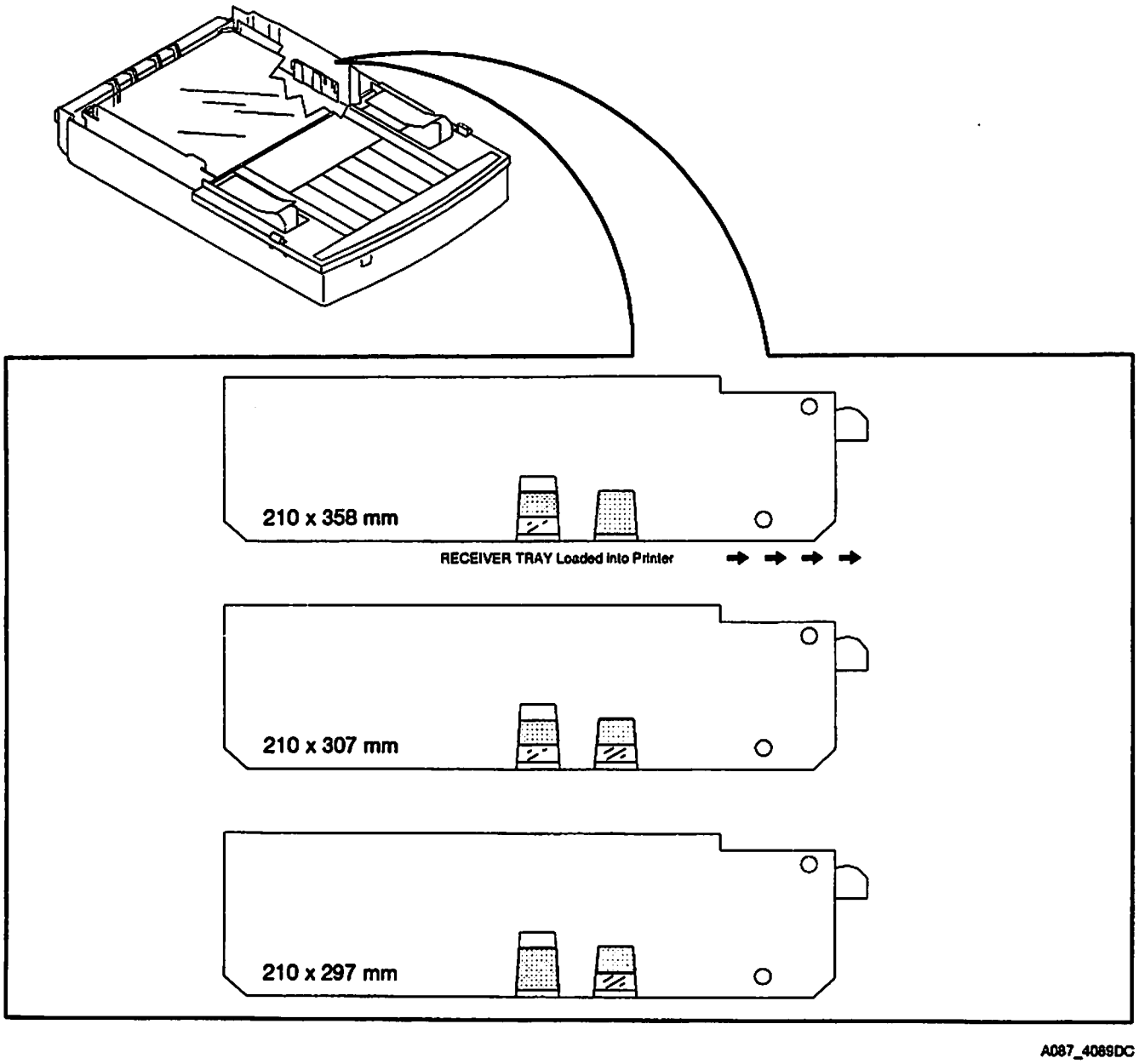
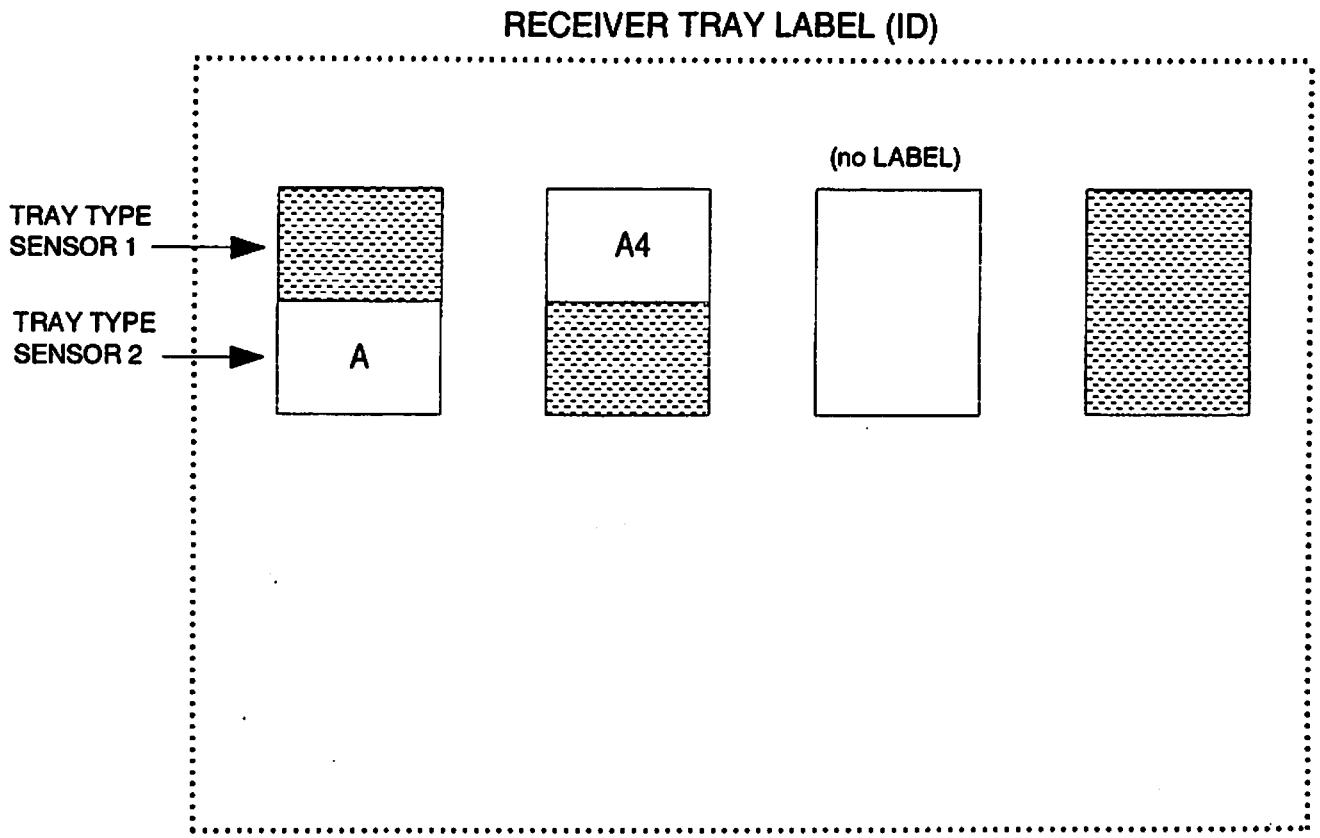


Figure 32 A4 SIZE UNI ADJUSTABLE TRAY RECEIVER Sizes



	TRAY TYPE SENSOR 1	TRAY TYPE SENSOR 2	TRAY TYPE SENSOR 3	Image Size		Receiver Size	
A	■			8.000 x 8.933	203 x 227	8.504 x 10.984	216 x 279
A4		■		8.000 x 9.633	203 x 245	8.268 x 11.693	210 x 297
(A X 12) inch	■		■	8.000 x 10.000	203 x 254	8.504 x 12.087	216 x 307
(A4 X 12) inch		■	■	8.000 x 10.000	203 x 254	8.268 x 12.087	210 x 307
(9.5 x 14) inch	■	■	■	8.500 x 12.000	216 x 305	9.488 x 14.094	241 x 358
(A x 14) inch	■	■		8.000 x 12.000	203 x 305	8.504 x 14.094	216 x 358
(A4 x 14) inch			■	8.000 x 12.000	203 x 305	8.268 x 14.094	210 x 358

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Figure 33

- ROLLER ASSEMBLY
  - Description: Includes the STEPPER MOTOR, PINCH MOTOR, PLATEN BRAKE, PINCH ARMS, PINCH ROLLER, PLATEN ROLLER, CAPSTAN TRACTION ROLLER, DONOR SENSORS, and the LEAD EDGE SENSOR.
  - LEAD EDGE SENSOR - This SENSOR detects the position of the RECEIVER only when the print is first fed into the nip, determining the lead edge border size.
  - DONOR SENSORS - Dual SENSORS that interface with the green and blue EMITTERS installed on the DOOR ASSEMBLY. The SENSORS are used to detect the color of the DONOR during the PRINTER cycles.
  - STEPPER MOTOR, INTERMEDIATE GEAR, and CAPSTAN TRACTION ROLLER - Used during the pick, print, rewind and eject cycles of the PRINTER. Interfaces with the PINCH ROLLER to transport and step the RECEIVER during the print cycle. Has 2 KICKERS on the CAPSTAN TRACTION ROLLER that push the RECEIVER into the EXIT TRAY during the eject cycle. Controls print registration.
  - PINCH ROLLER, PINCH ARMS, and PINCH MOTOR - The PINCH MOTOR applies pressure through the PINCH ARMS to the PINCH ROLLER. Interfaces with the CAPSTAN/TRACTION ROLLER to control advancing, rewinding, and ejecting RECEIVERS. Controls registration.
  - PLATEN ROLLER/PLATEN BRAKE - A ROLLER that interfaces with the THERMAL HEAD BEAD for a correct print cycle. Controls page uniformity and density.

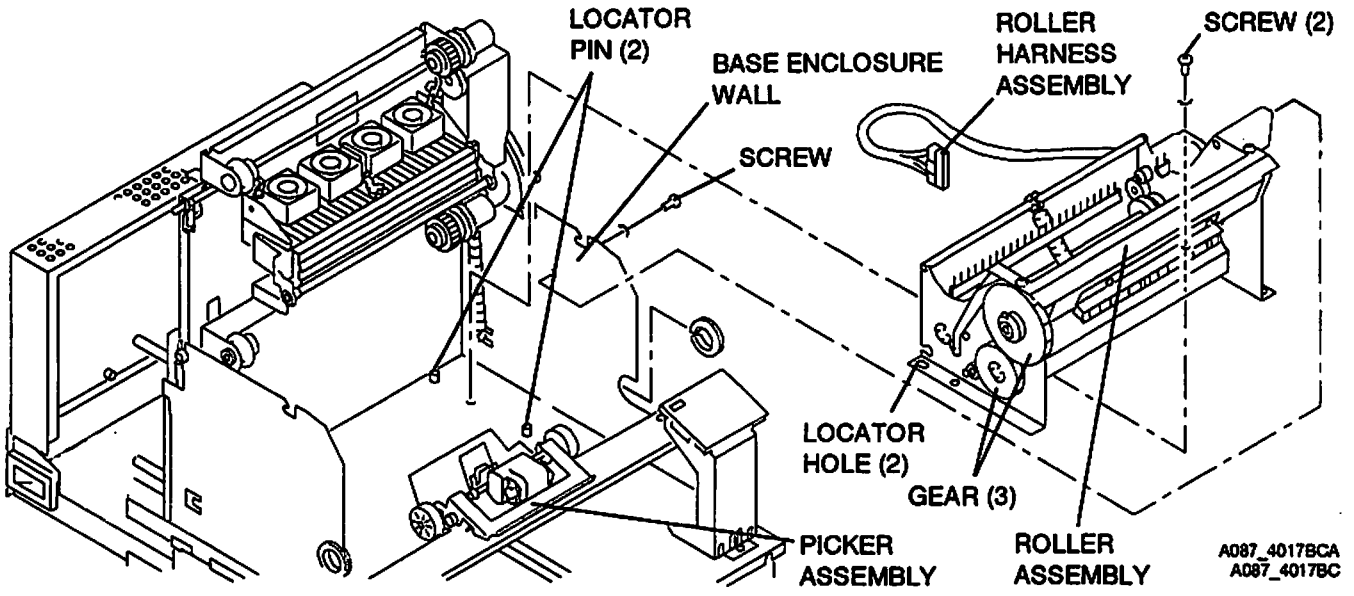

Figure 34 ROLLER ASSEMBLY

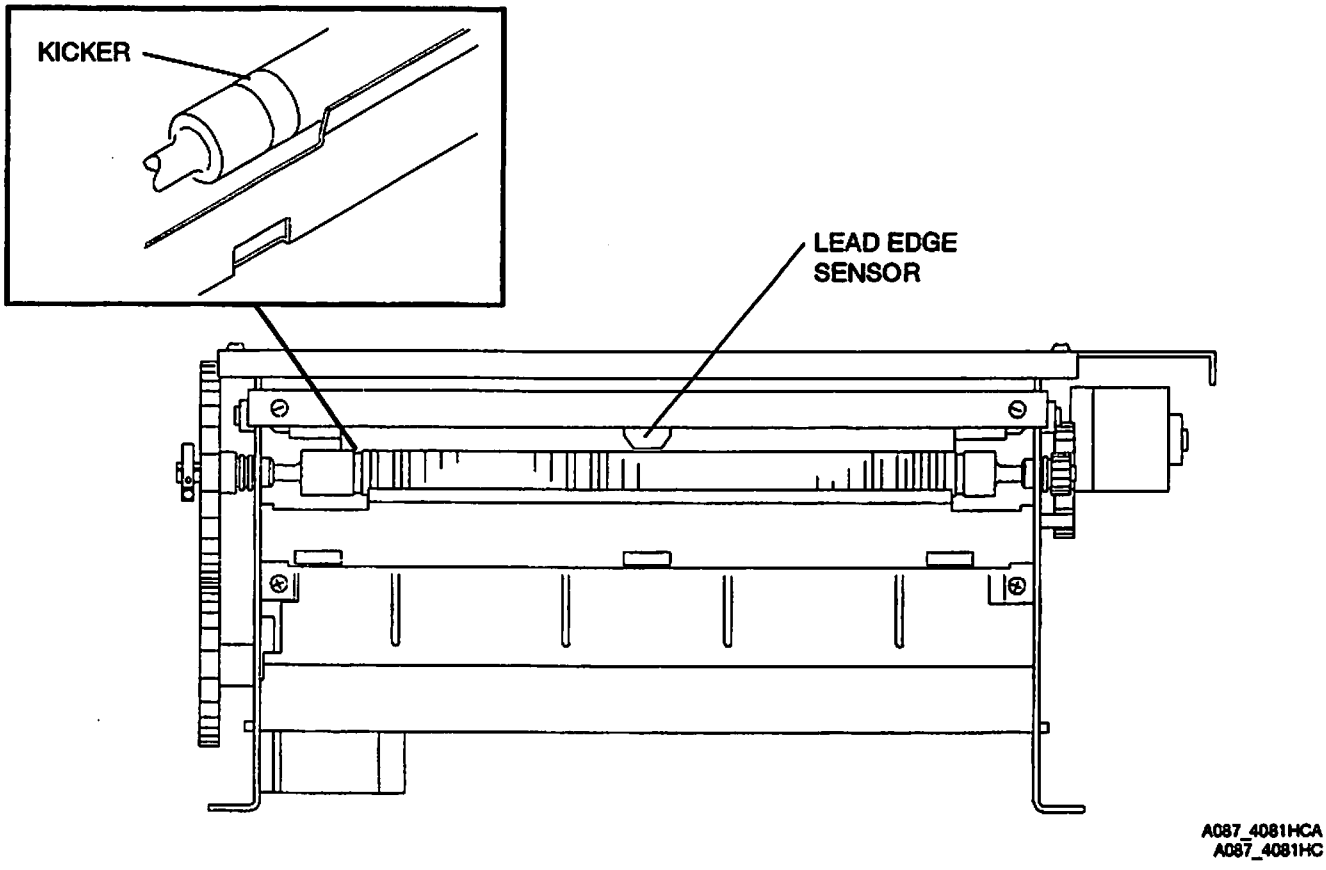

Figure 35 ROLLER ASSEMBLY

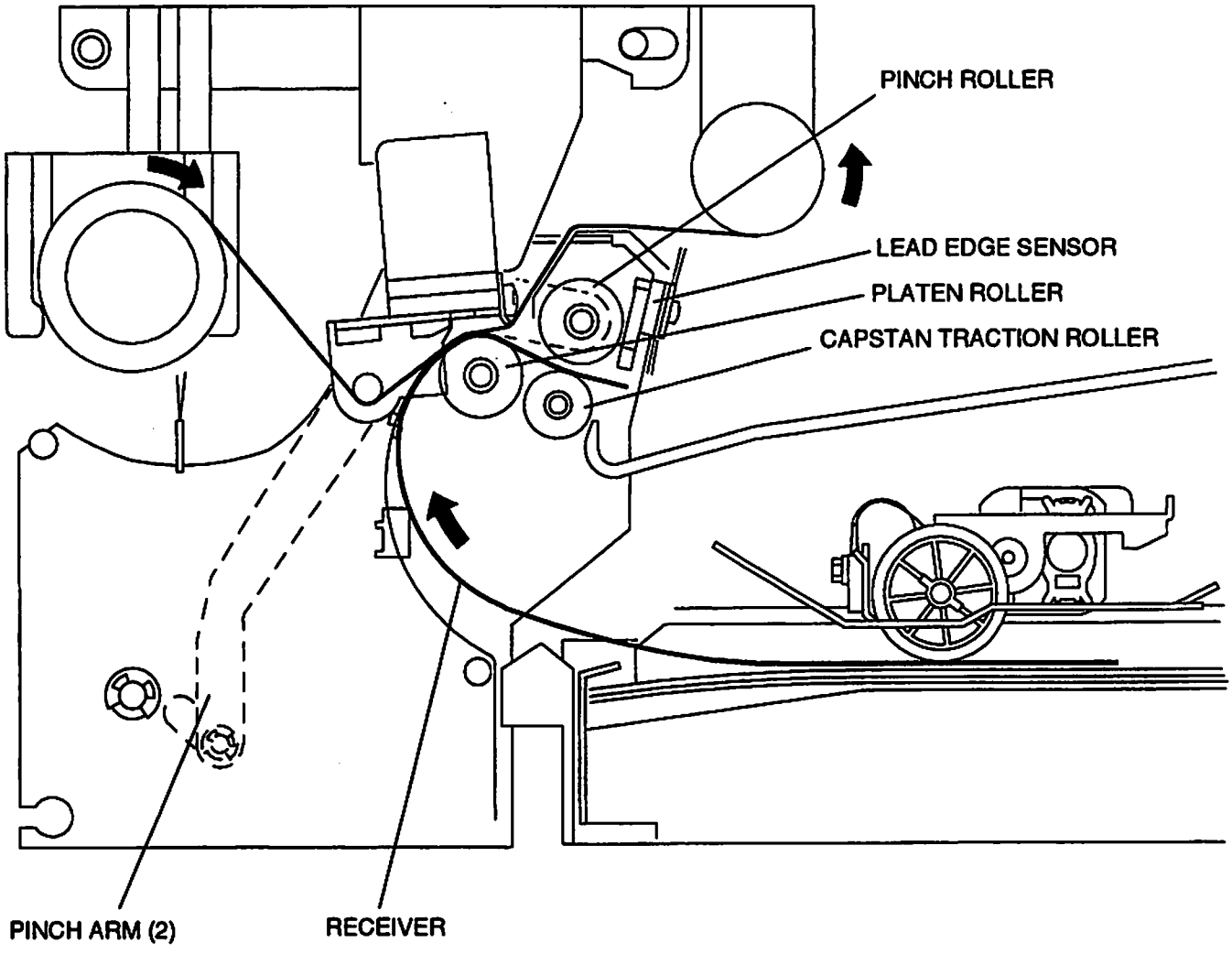

Figure 36 ROLLER ASSEMBLY Side View

- CONTROLLER PRINTED CIRCUIT BOARD
  - Includes the firmware, interface control, memory control, I/O control, MODE CONTROL SWITCH, EEPROM, adjustment POTENTIOMETERS and test points and PULSE HEAD MODULATOR.
  - Firmware PROMS - 2 PROMS that control the complete electro-mechanical print process of the ENGINE.
  - EEPROMS - Includes the ENGINE calibration, enable widths, parasetic compensation, counters, failure history, initialization messages, matrix coefficients, and interpolation points.
  - INTERFACE CONTROL PAL - Includes the programmable logic necessary to control the communication interface to the KIM PRINTED CIRCUIT BOARD.
  - MEMORY CONTROL PAL - Programmable logic necessary to allow the CPU to communicate with the PROMS, STATIC RAM, and PULSE HEAD MODULATOR.
  - I/O CONTROL PAL - Includes the programmable logic necessary to allow the CPU to communicate with the DISPLAY, A/D CONVERTER (THERMAL HEAD temperature), EEPROM, and I/O CONTROLLER.
  - PHM - PULSE HEAD MODULATOR: A component that controls the pulses to the THERMAL HEAD during the print cycle.
  - CPU - CENTRAL PROCESSING UNIT for the ENGINE.
  - CONNECTOR for DONOR BRACKET BARCODE ASSEMBLY. The BARCODE SENSOR detects the DONOR type.

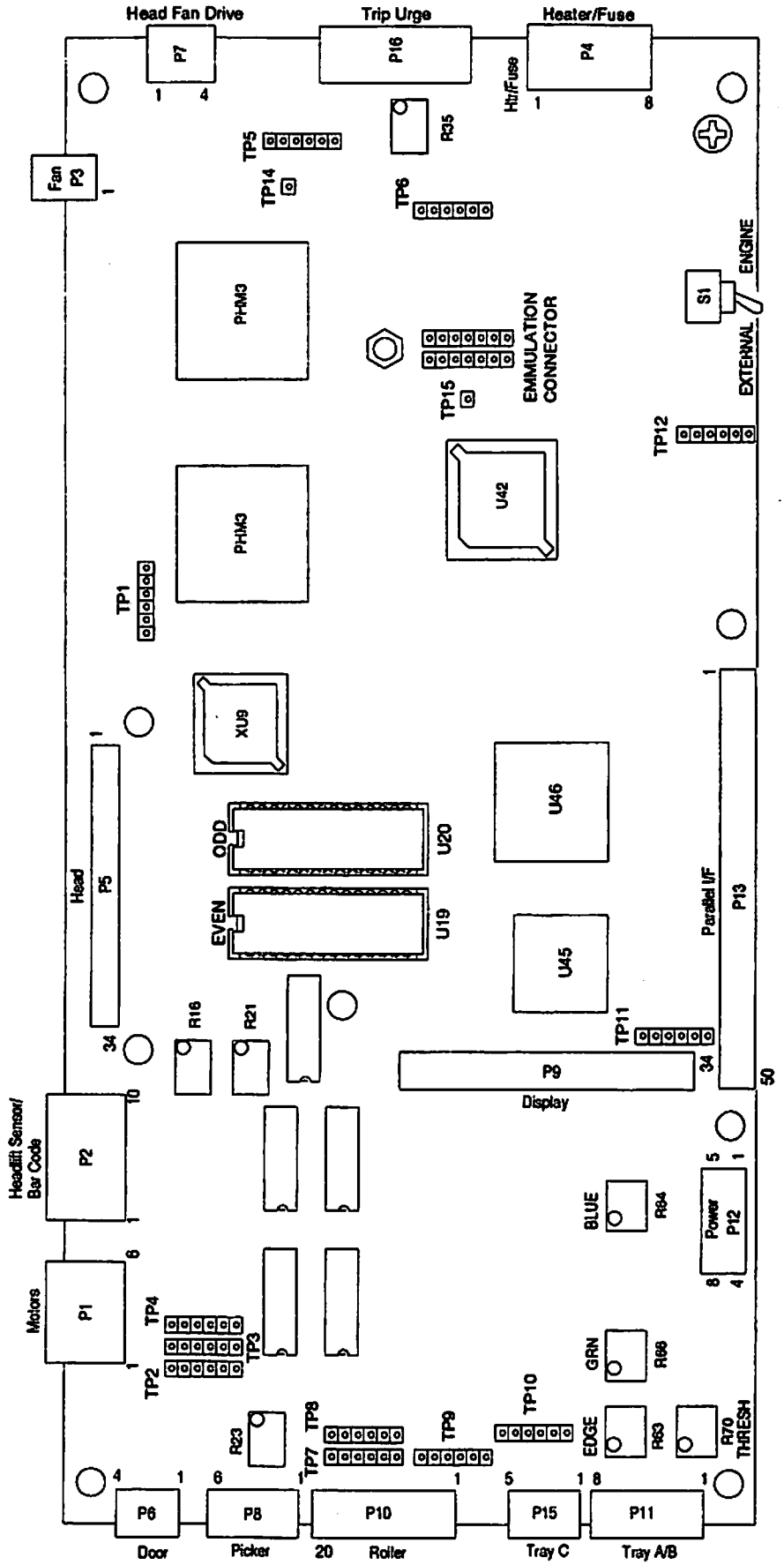

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Figure 37 CONTROLLER BOARD Component Locations

- SUPPLY BRACKET ASSEMBLY
  - Includes the SUPPLY BRACKET, SPINDLE and CLUTCH/SPINDLE. The SUPPLY BRACKET interfaces with the SUPPLY MOTOR to control DONOR movement. The CLUTCH/MOTOR ASSEMBLY moves in forward or reverse during some of the actions of the print cycle. Holds the DONOR SUPPLY ROLL.
  - The BAR CODE SENSOR and BAR CODE PRINTED CIRCUIT are mounted to the SUPPLY BRACKET. The SUPPLY SPOOL has a BAR CODE LABEL to interface with the BAR CODE SENSOR.

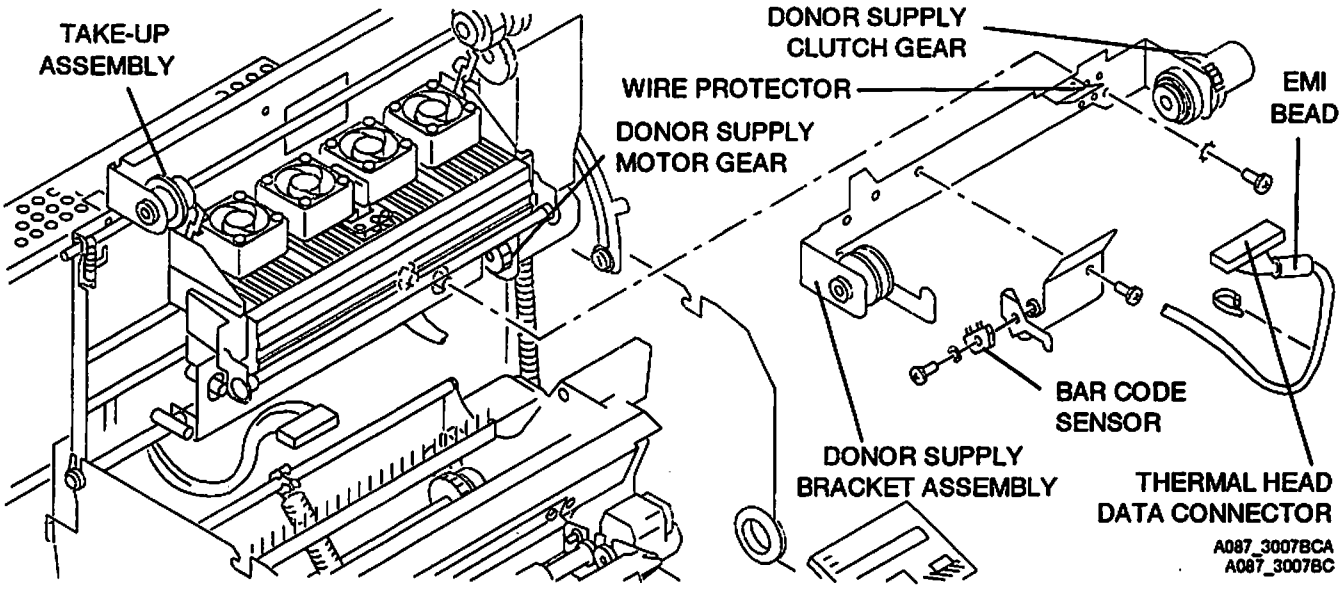

Figure 38

- FAN BRACKET ASSEMBLY
  - Includes 4 FANS and 2 DONOR EMITTERS.
  - 4 FANS - Used to remove heat from the THERMAL HEAD during the print cycle.
  - DONOR EMITTERS - Blue and green EMITTERS that interface with the DONOR SENSORS on the ROLLER ASSEMBLY to detect which DONOR patch (color) is present.
  - The FAN BRACKET has a ramp on each end that is used to support the THERMAL HEAD in the retract, load, and engaged positions.

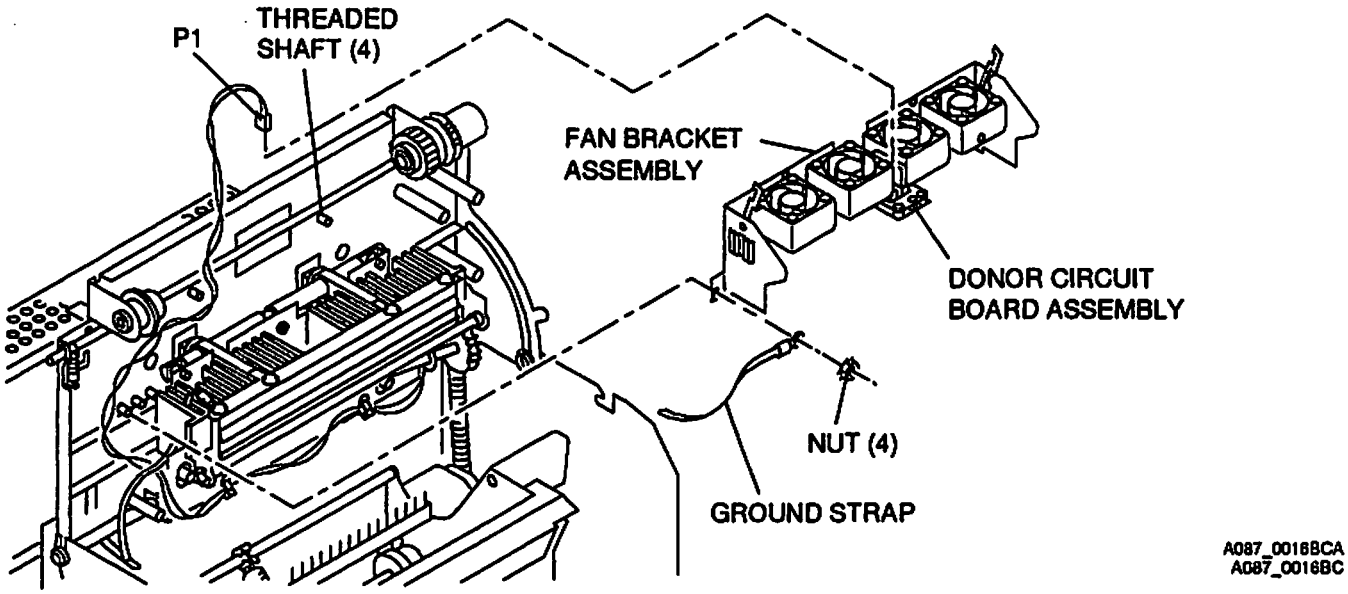

Figure 39

- DOOR ASSEMBLY - Includes the TAKE-UP SPINDLE, SPINDLE CLUTCH, THERMAL HEAD LIFT SPRINGS, THERMAL HEAD LIFT BRACKET, THERMAL HEAD LIFT CAM SHAFT, THERMAL HEAD LIFT SENSOR, and the DOOR SHAFT.
  - THERMAL HEAD LIFT SENSOR - Dual SENSORS that detect the positions of the THERMAL HEAD through the use of dual FLAGS that are connected to the THERMAL HEAD LIFT CAM SHAFT.
  - THERMAL HEAD LIFT BRACKET and THERMAL HEAD LIFT CAM SHAFT - The BRACKET is fastened to the DOOR ASSEMBLY. The THERMAL HEAD LIFT CAM SHAFT is operated by GEARS from the THERMAL HEAD LIFT MOTOR. The THERMAL HEAD LIFT MOTOR operates the THERMAL HEAD LIFT CAM SHAFT. The CAM moves the BRACKET, which lifts the HEAT SINK into the correct position.
  - THERMAL HEAD LIFT SPRINGS - Fastened to the DOOR ASSEMBLY and HEAT SINK. Applies pressure on the HEAT SINK, aligning the THERMAL HEAD to the PLATEN ROLLER.
  - TAKE-UP SPINDLE and SPINDLE/CLUTCH - The TAKE-UP REEL is fastened to both the left SPINDLE and SPINDLE/CLUTCH. The SPINDLE/CLUTCH is operated by the TAKE-UP MOTOR, which advances the DONOR.

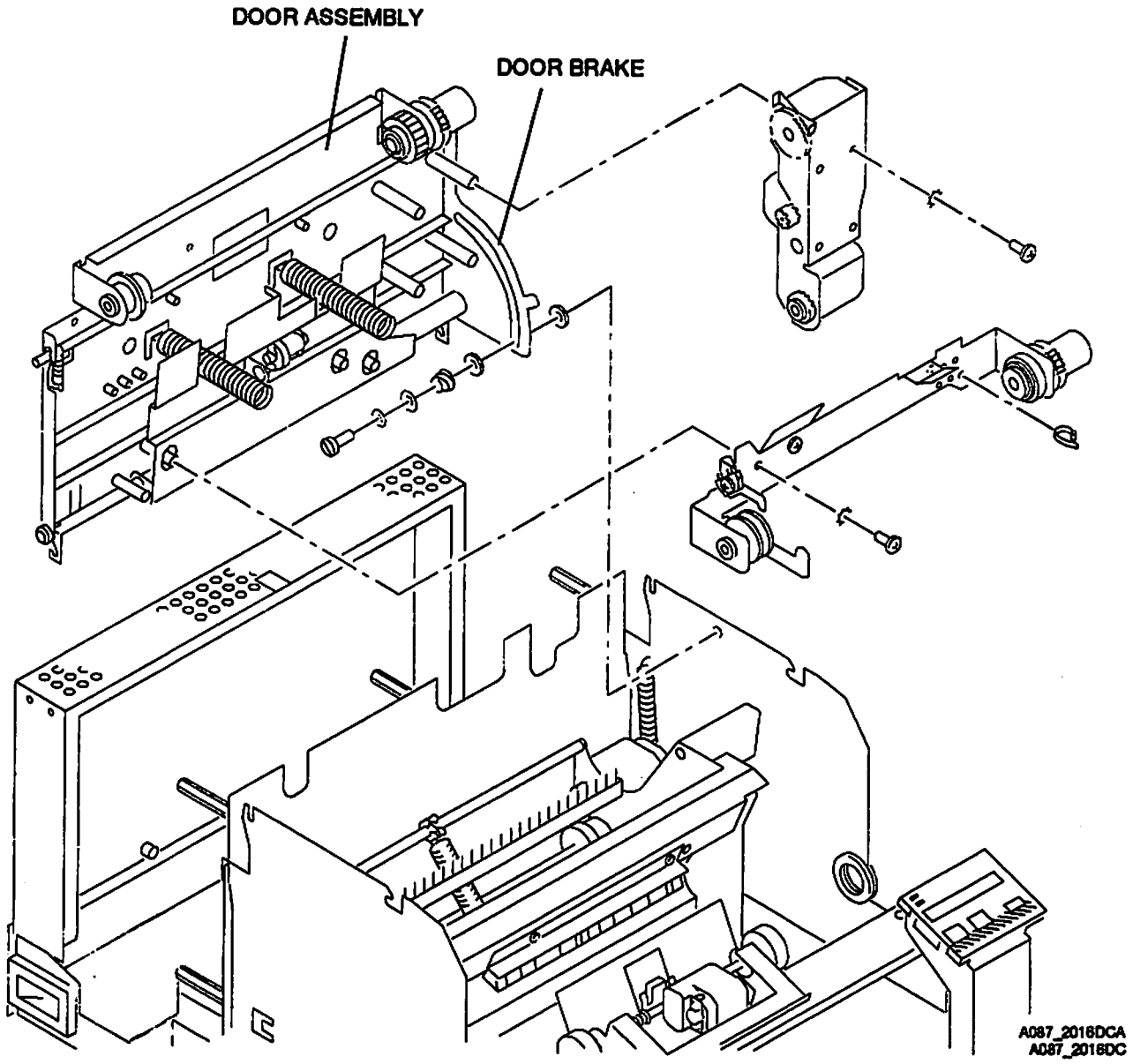

Figure 40

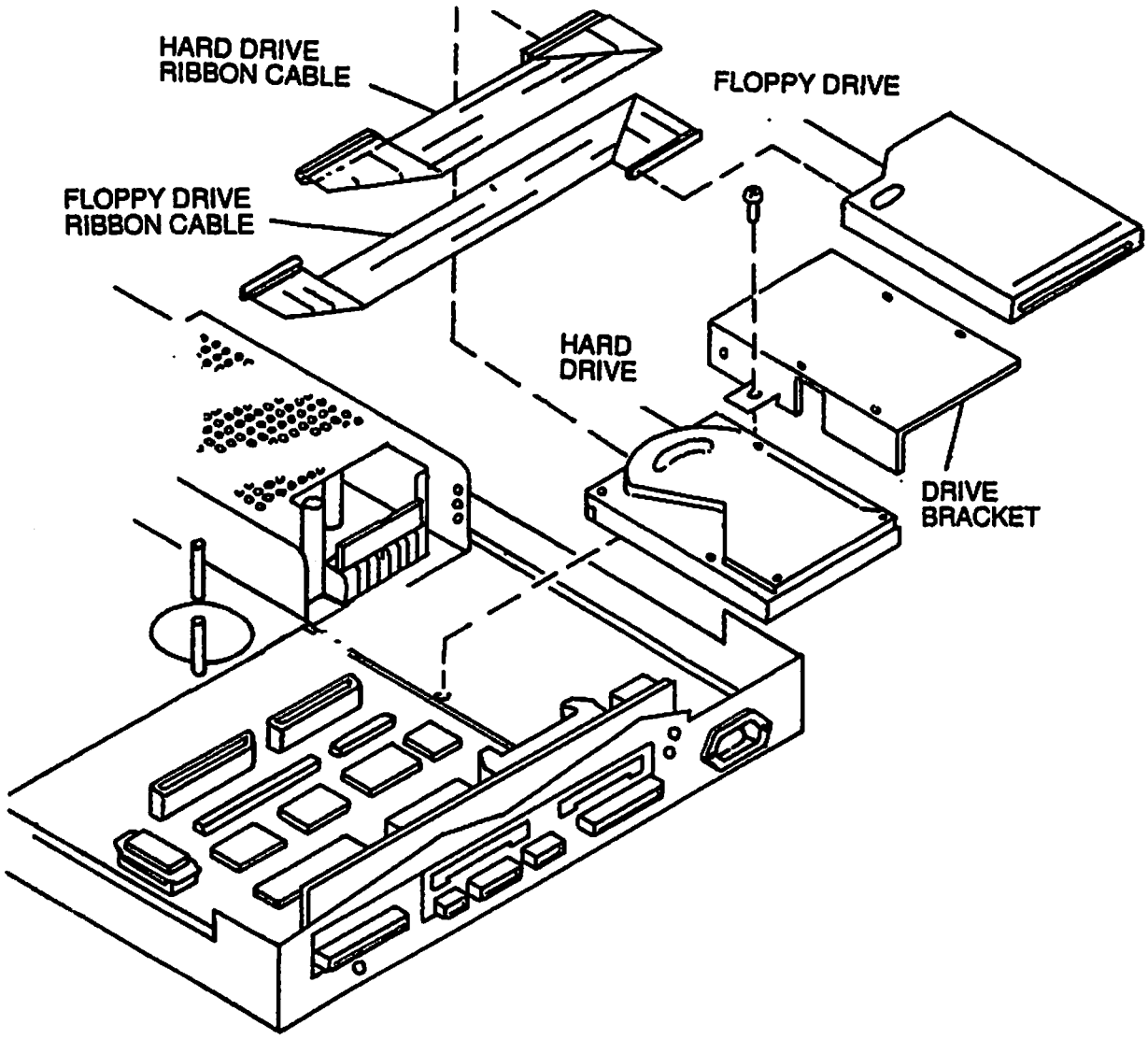

Figure 41 HARD DRIVE AND FLOPPY DRIVE

- DELTA POWER SUPPLY
  - Integrated POWER SUPPLY
  - 5 and 12 V DC POWER SUPPLY - The POWER SUPPLY that provides power to the CONTROLLER PRINTED CIRCUIT BOARD and SPARC PRINTED CIRCUIT BOARD; 4 different voltages are supplied, 5 V DC, 12 V DC, and -12 V DC. The CONTROLLER PRINTED CIRCUIT BOARD uses 5 V DC, 12 V DC. SPARC PRINTED CIRCUIT BOARD uses 5 V DC, 12 V DC, and - 12 V DC.
  - THERMAL HEAD POWER SUPPLY - The POWER SUPPLY that provides power to the THERMAL HEAD only.

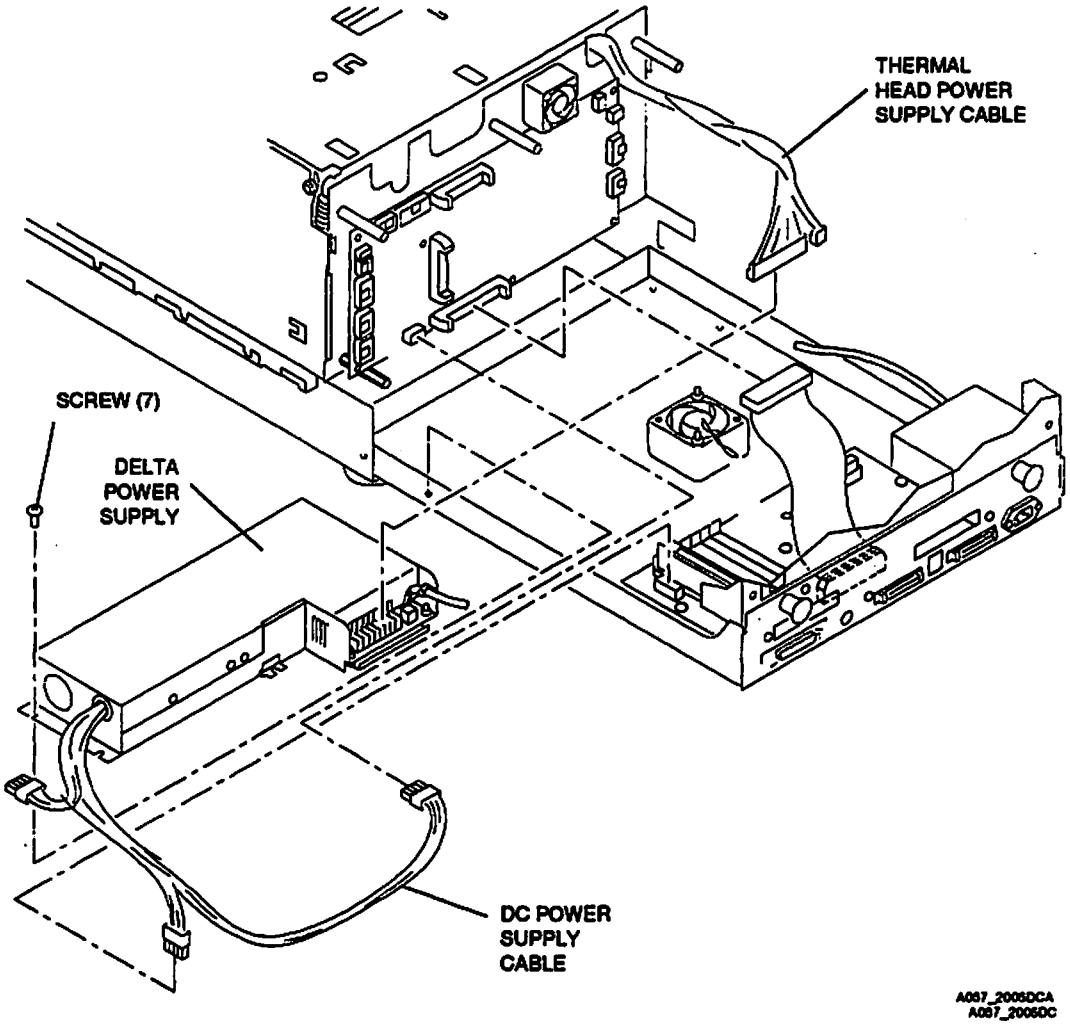

Figure 42

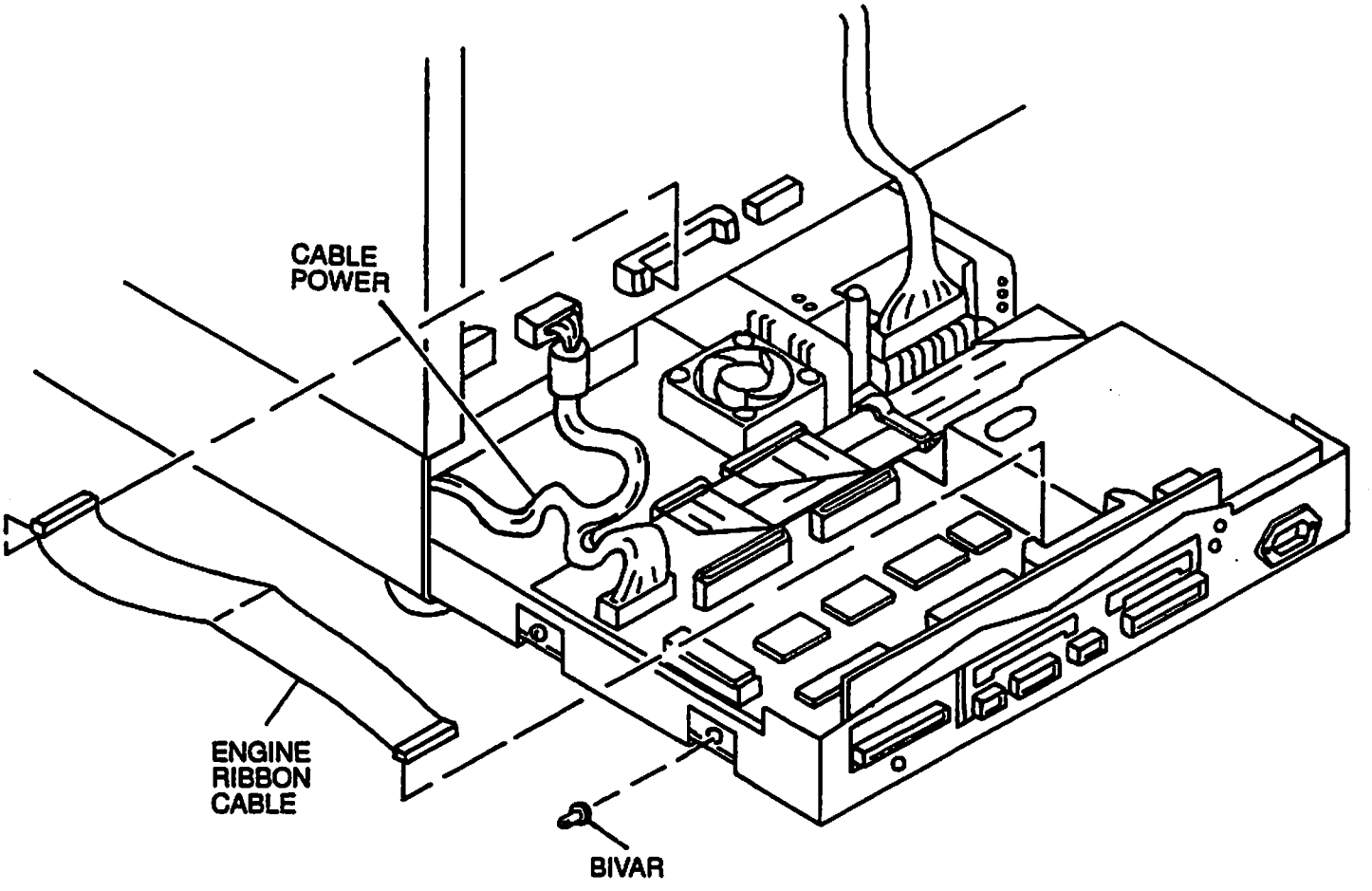

Figure 43 IOCB TO PRINT ENGINE CONNECTION

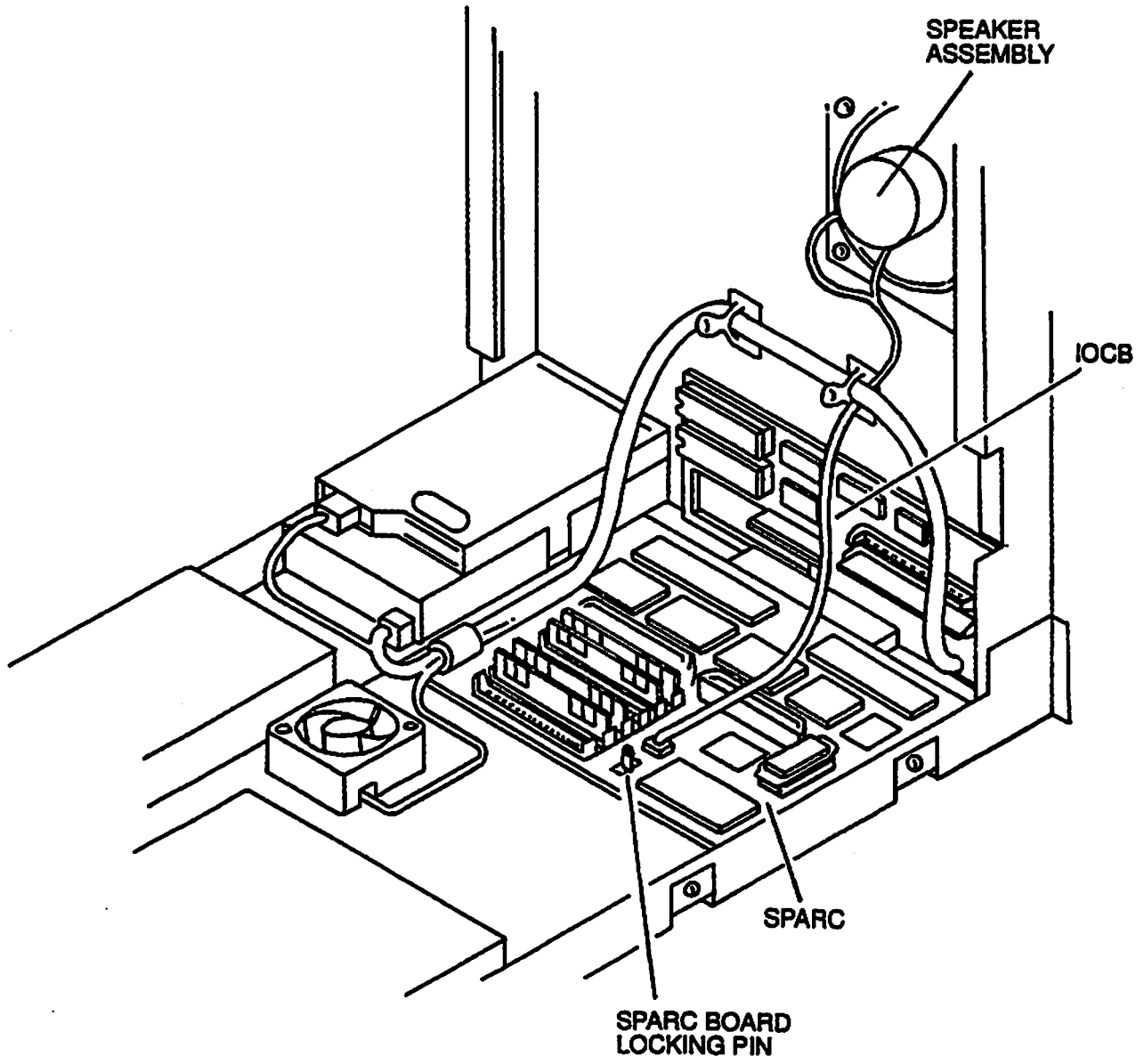

Figure 44 PCB INSTALLATION

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Table 1 Physical Specifications

Item	Specification
Size	52.1 D x 42.6 W x 30.5 H cm (20.5 D x 16.75 W x 12 H in.)
Printer only weight	25 kg (55 lbs.)
Printer in box weight	32.3 kg (71 lbs.)
Tilt position	10 ° ± 1 ° any axis maximum
Ambient operating temperature	15 to 30 ° C, (59 ° to 86 ° F)
Relative humidity	20 to 76 ° %
Sound level	55 db. operating maximum

RECEIVER Sizes

Table 2 RECEIVER Sizes

RECEIVER Size	Inches (W x L)	Cm (W x L)
A	8.5 x 11 ± .040 in. 8.5 x 12 ± .040 in. 8.5 x 14 ± .040 in.	21.7 x 28.1 ± 0.1 cm 21.7 x 30.7 ± 0.1 cm 21.7 x 35.8 ± 0.1 cm
A4	8.27 x 11.69 ± .040 in. 8.27 x 12 ± .040 in. 8.27 x 14 ± .040 in.	21.0 x 29.7 ±.1 cm 21.0 x 30.7 ± .1 cm 21.0 x 35.8 ± .1 cm
LW	9.5 x 14 ± .040 in.	24.3 x 35.8 ± .1 cm

Table 3 Image Size

Size	Specification
A	20.32 x 22.69 ± .064 cm) (8.00 x 8.933 ± .025 in.) 2400 pixels x 2680 lines
A	20.4 x 25.6 cm (8.00 x 10.00 in.) 2400 pixels x 3000 lines
A	20.4 x 30.7 cm (8.00 x 12.00 in.) 2400 pixels x 3626 lines
A4	20.32 x 24.47 ± .064 cm (8.00 x 9.633 ± .025 in.) 2400 pixels x 2890 lines
A4	20.4 x 24.6 cm (8.00 x 9.6 in.) 2400 pixels x 2890 lines
A4	20.4 x 25.6 cm (8.00 x 10.00 in.) 2400 pixels x 3000 lines
9.5 x 14 in.	21.7 x 30.7 cm (8.5 x 12.00 in.) 2550 pixels x 3626 lines

Table 4 Image Placement - Lead Edge

Type	Specification
Lead Edge	2.60 ± .064 cm (1.025 ± .025 in.)

Table 5 Image Placement - Left border (right side of printer)

Size	Type	Specification
A	REFLECTIVE	.63 ± .238 cm (.252 ± .095 in.)
A	TRANSPARENCY	.63 ± .275 cm (.252 ±.110 in.)
A4	REFLECTIVE	.335 ± .238 cm (.134 ± .095 in.)
A4	TRANSPARENCY	.335 cm ± .275 cm (.134 ±.110 in.)
LW	REFLECTIVE	1.24 ± .238 cm (.494 ± .095 in.)
LW	TRANSPARENCY	1.24 ± .275 cm (.494 ±.110 in.)

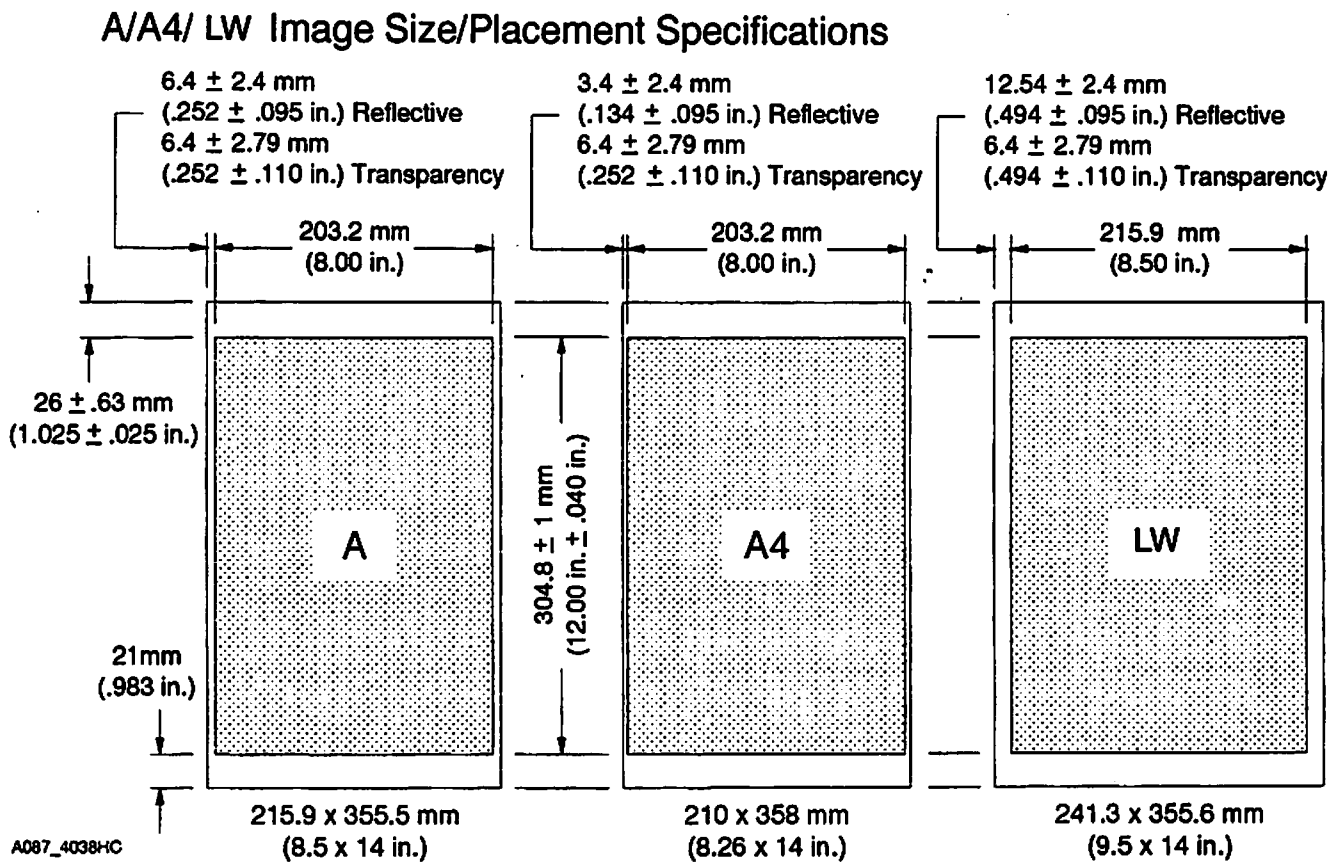
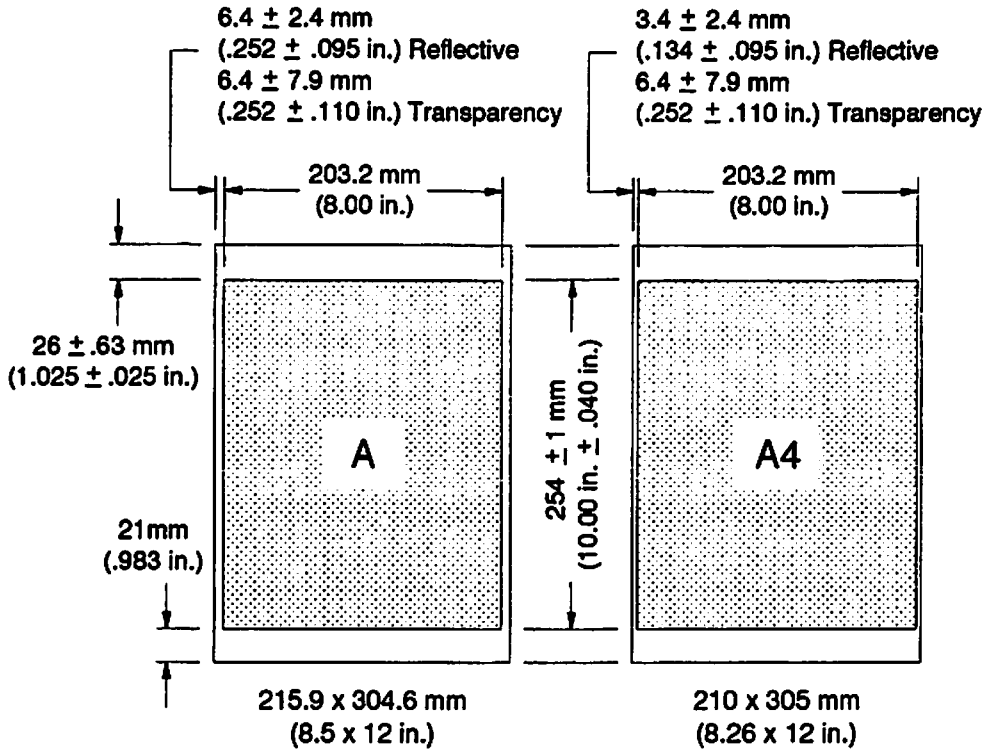


Figure 45

A Long/A4 Long Image Size/Placement Specifications



A087_4039HC

Figure 46

Image Size/Placement Specifications

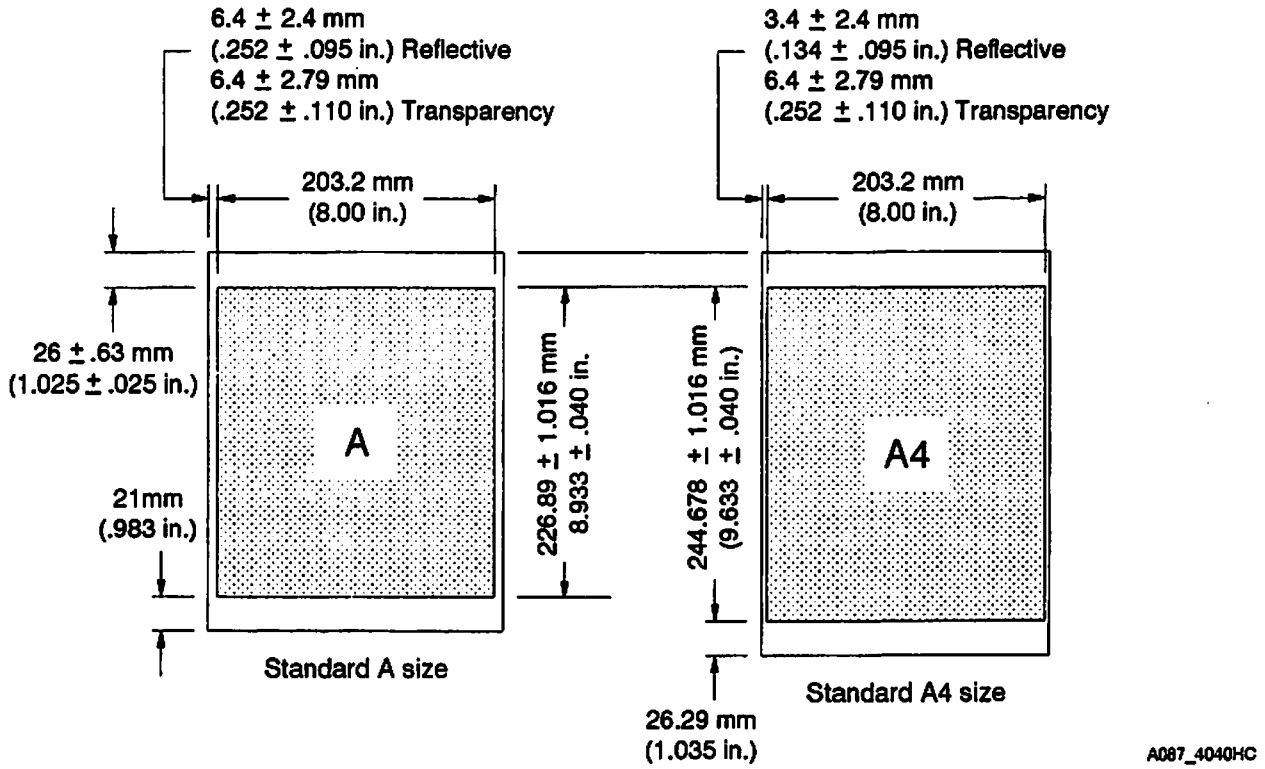


Figure 47

Media

Paper and Color Ribbon

- 1600P-A 100, A-size sheets, 8.5 x 11 in.
- 1600P-A4 100, A4-size sheets, 210 x 297 mm
- 1600P-LA 100, Long A-size sheets, 8.5 x 12 in.
- 1600P-LA4 100, Long A4-size sheets, 210 x 305 mm
- 1600P-XLA 100, X-Long A-size sheets, 8.5 x 14 in.
- 1600P-XLA4 100, X-Long A4-size sheets, 210 x 356 mm
- 1600P-XLW 100, X-Long Wide-size sheets, 9.5 x 14 in.

Transparency and Color Ribbon

- 1600T-A 100, A-size sheets, 8.5 x 11 in.
- 1600T-A4 100, A4-size sheets, 210 x 297 mm
- 1600T-LA 100, Long A-size sheets, 8.5 x 12 in.
- 1600T-LA4 100, Long A4-size sheets, 210 x 305 mm
- 1600T-XLA 100, X-Long A-size sheets, 8.5 x 14 in.
- 1600T-XLA4 100, X-Long A4-size sheets, 210 x 356 mm

Paper and Black Ribbon with Laminate

- 1600B-A 300, A-size sheets, 8.5 x 11 in.
- 1600B-A4 300, A4-size sheets, 210 x 297 mm
- 1600B-LA 300, Long A-size sheets, 8.5 x 12 in.
- 1600B-LA4 300, Long A4-size sheets, 210 x 305 mm
- 1600B-XLA 300, X-Long A-size sheets, 8.5 x 14 in.
- 1600B-XLA4 300, X-Long A4-size sheets, 210 x 356 mm
- 1600B-XLW 300, X-Long Wide-size sheets, 9.5 x 14 in.

Paper and Color Ribbon with Laminate

- 1600L-A 100, A-size sheets, 8.5 x 11 in.
- 1600L-A4 100, A4-size sheets, 210 x 297 mm
- 1600L-LA 100, Long A-size sheets, 8.5 x 12 in.
- 1600L-LA4 100, Long A4-size sheets, 210 x 305 mm

Cassettes

Adjustable cassette, 100 sheet capacity.

- 1600C-A+ Holds A, Long A, and X-Long A-size
- 1600C-A4+ Holds A4, Long A4, and X-Long A4-size
- 1600C-W Holds X-Long Wide-size

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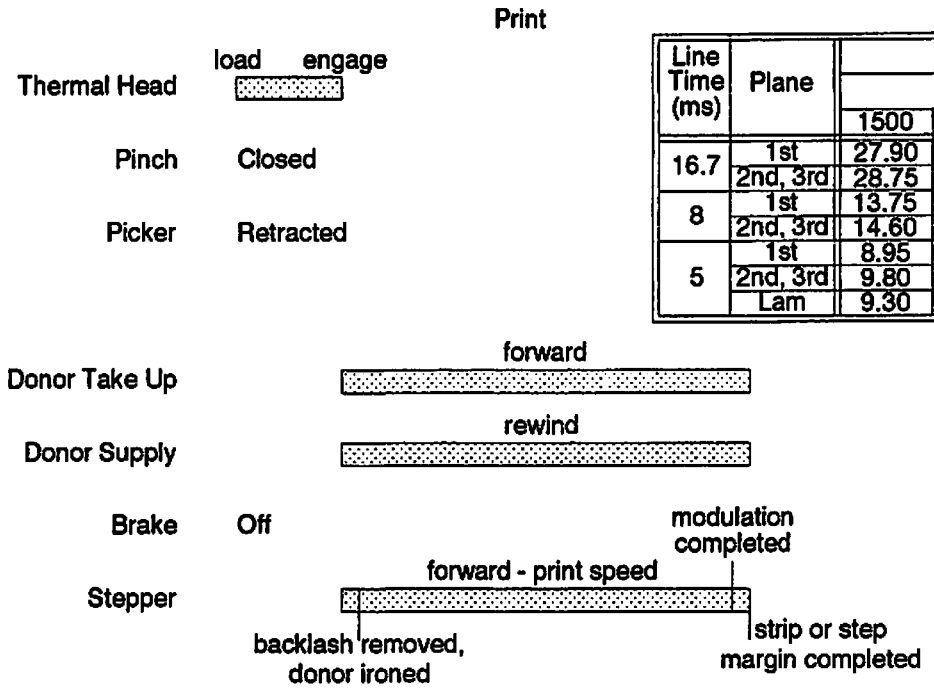
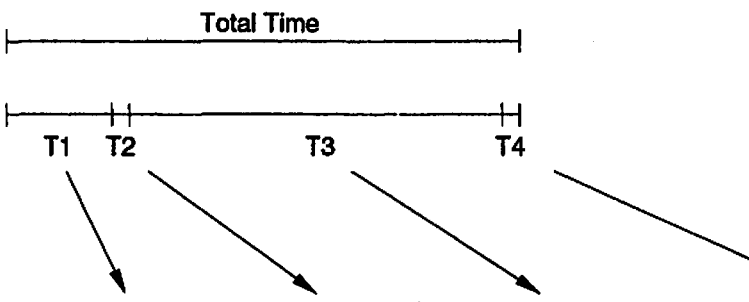
Print Cycle



Line Time (ms)	Plane	Total Time (sec) Lines per Plane				
		1500	2680	2890	3000	3600
16.7	1st	27.90	47.60	51.10	52.95	62.95
	2nd, 3rd	28.75	48.45	51.95	53.80	63.80
8	1st	13.75	23.20	24.85	25.75	30.55
	2nd, 3rd	14.60	24.05	25.70	26.60	31.40
5	1st	8.95	14.85	15.90	16.45	19.45
	2nd, 3rd	9.80	15.70	16.75	17.30	20.30
	Lam	9.30	15.20	16.25	16.80	19.80



	T1 (sec)
Before first plane	0.70
Before 2nd, 3rd, or Lamination planes	1.55

Line Time (ms)	T2 (sec)	T3 (sec) Lines per Plane					T4 (sec)
		1500	2680	2890	3000	3600	
16.7	0.50	25.05	44.75	48.25	50.10	60.10	1.65
8	0.25	12.00	21.45	23.10	24.00	28.80	0.80
5	0.20	7.50	13.40	14.45	15.00	18.00	0.55
Lam	0.15	7.55	13.45	14.50	15.05	18.05	0.05

A087_9023DC

Figure 55

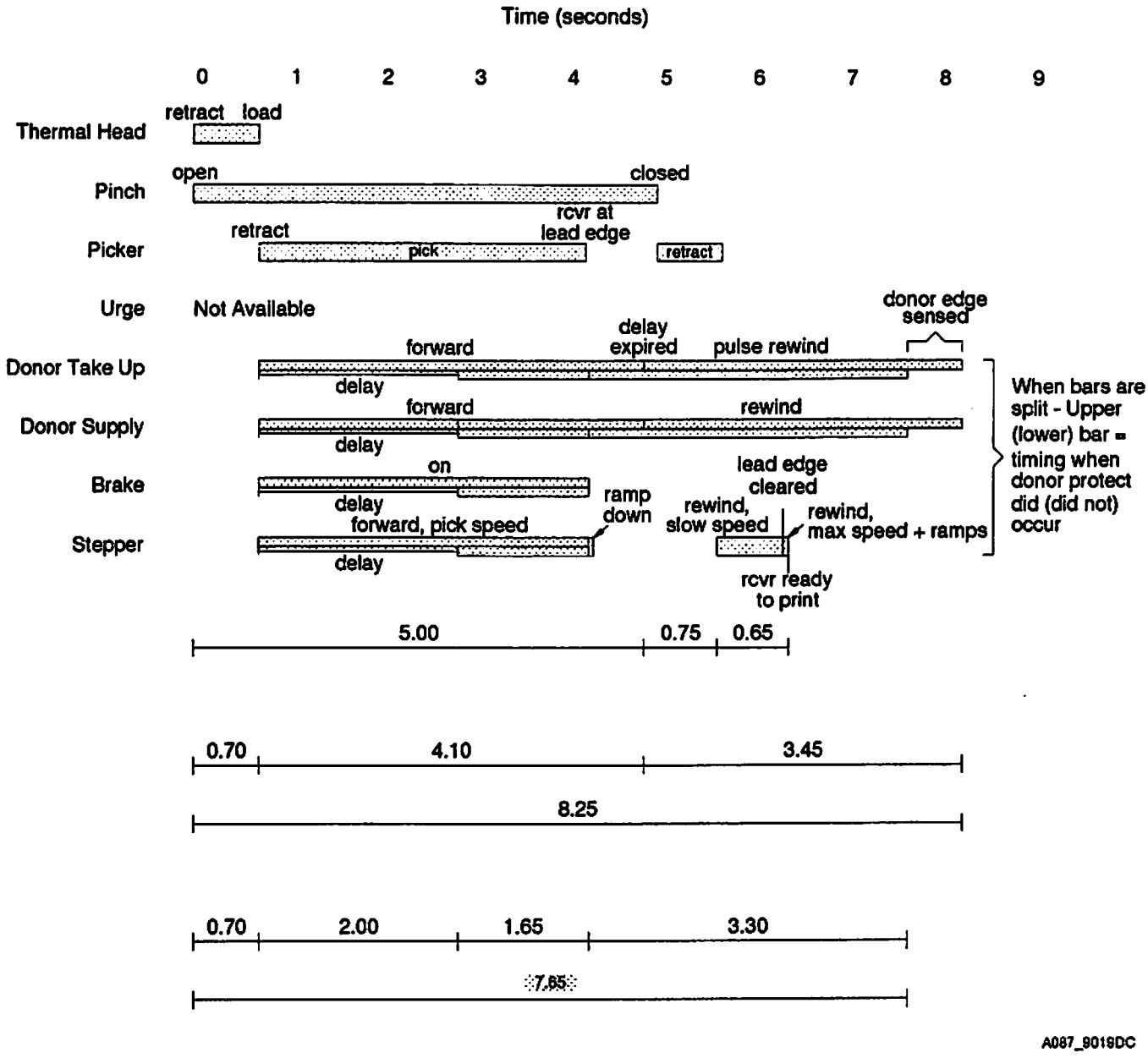

Time (seconds)
0
1
2
3
4
5
6
7
8
9
Thermal Head
retract
load
Pinch
open
closed
Picker
retract
rcvr at lead edge
pick
retract
Urge
Not Available
donor edge sensed
Donor Take Up
forward
delay expired
pulse rewind
delay
Donor Supply
forward
rewind
delay
Brake
on
delay
lead edge cleared
ramp down
Stepper
forward, pick speed
delay
rewind, slow speed
rewind, max speed + ramps
rcvr ready to print
When bars are split - Upper (lower) bar = timing when donor protect did (did not) occur
5.00
0.75
0.65
0.70
4.10
3.45
8.25
0.70
2.00
1.65
3.30
7.65
A087_9019DC

Figure 56

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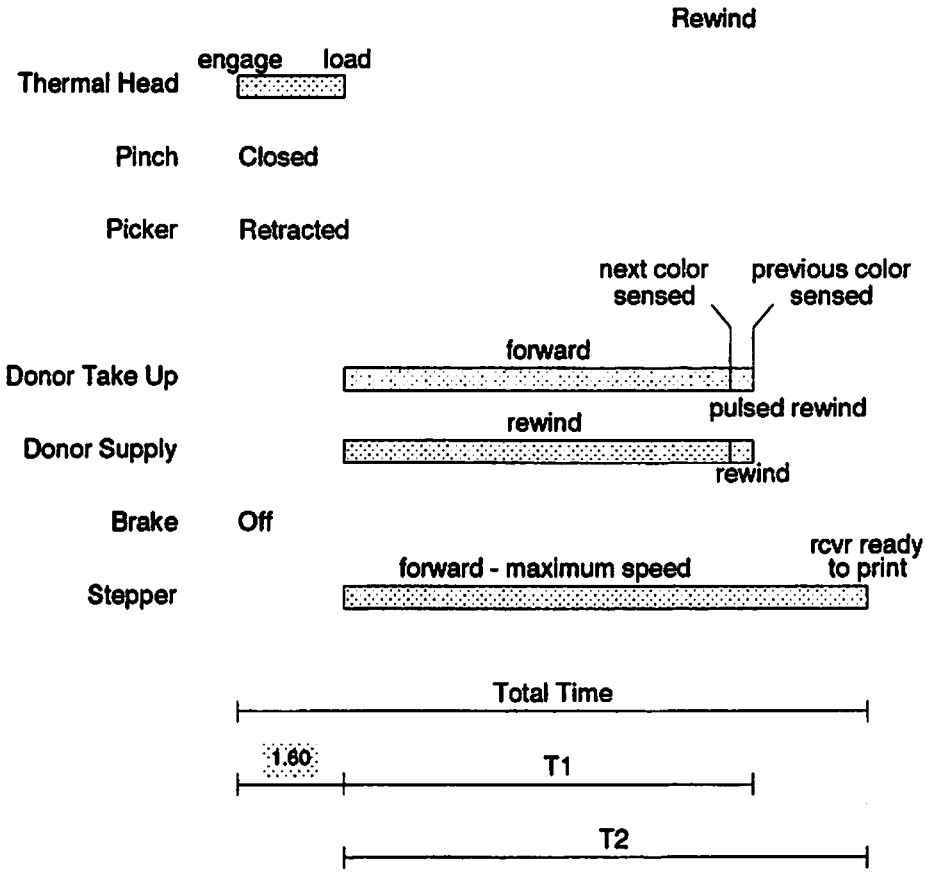
Rewind Cycle



Lines	T1 (sec) Donor Length (inches)			T2 (sec)	Total Time (sec) Donor Length (inches)		
	7	12	14		7	12	14
1600	1.05	3.80	5.00	1.60	1.05	5.40	6.60
2680	-	1.65	2.75	2.85	-	4.45	4.45
2890	-	1.25	2.35	3.05	-	4.65	4.65
3000	-	1.05	2.15	3.20	-	4.80	4.80
3600	-	-	1.05	3.85	-	-	5.45

A087_9025DC

Figure 59

Eject Timing Chart - No Lamination

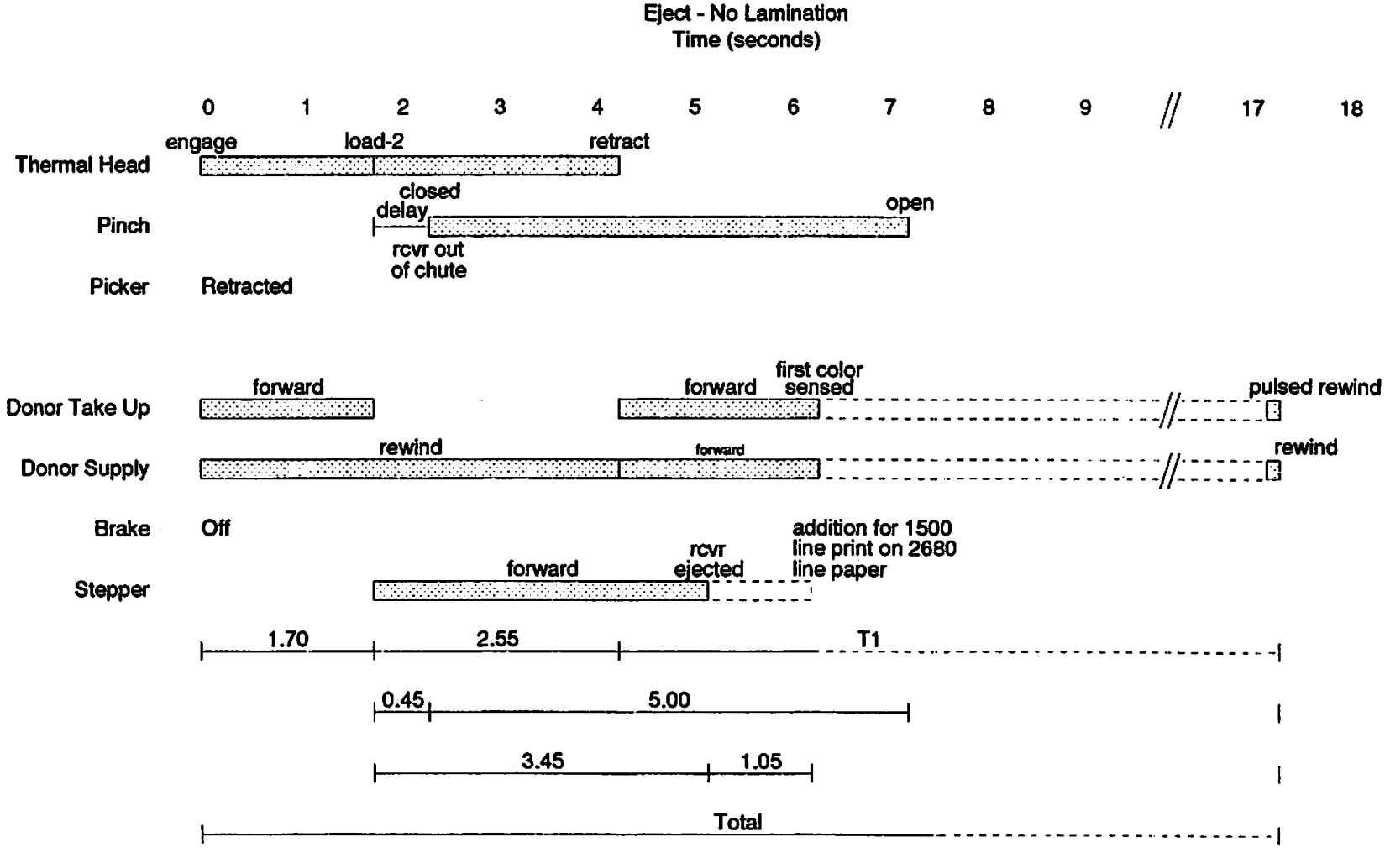
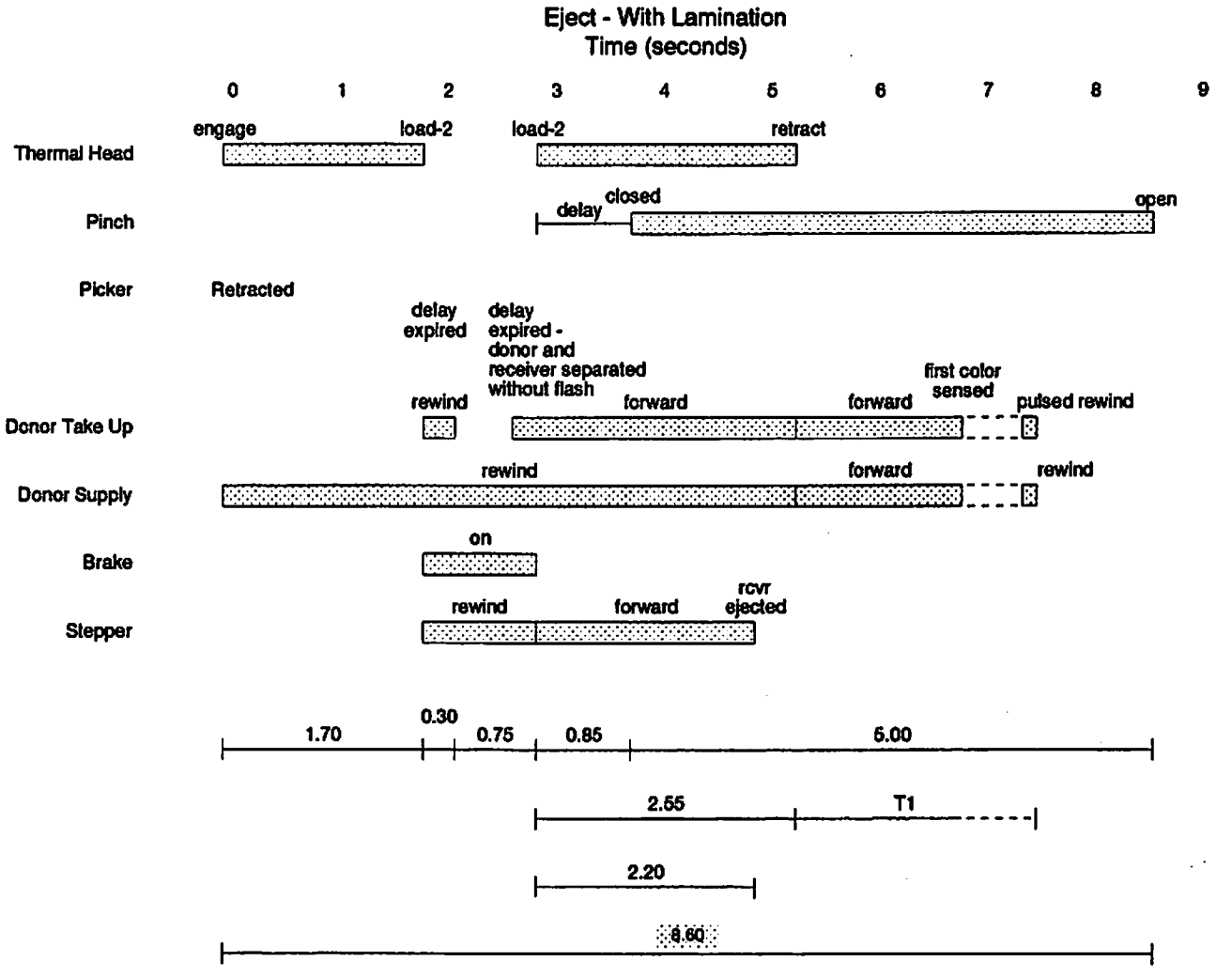


Figure 60

Lines	T1 (sec)					Total Time (sec)				
	Donor Length (inches)					Donor Length (inches)				
	7-WO/Lam	12-WO/Lam	14-WO/Lam	12-W/Lam	14-W/Lam	7-WO/Lam	12-WO/Lam	14-WO/Lam	12-W/Lam	14-W/Lam
1500	1.65	4.40	5.50	11.00	13.20	7.15	8.65	9.75	15.25	17.45
2680	-	2.15	3.35	8.75	11.05	-	7.15	7.60	13.00	15.30
2890	-	1.75	2.85	8.35	10.55	-	7.15	7.15	12.60	14.80
3000	-	1.65	2.75	8.25	10.45	-	7.15	7.15	12.50	14.70
3600	-	-	1.65	-	9.35	-	-	7.15	-	13.60

Eject Timing Chart - With Lamination



Lines	Donor Length (inches)	T1 (sec)
3600	14	1.55
3000	12	1.55
2890	12	1.75
2680	12	2.15

A087_S021DC

Figure 61

Sequence of Operation - Overview

[1] The DONOR BRACKET BARCODE ASSEMBLY reads the DONOR BAR CODE.

[2] The printer receives a print command.

[3] The printer senses and verifies the TRAY type.

[4] The RECEIVER is moved into the printer.

[5] A four-pass process is used to print the image in 4 passes, yellow, magenta, cyan, and a laminant.

[6] After the laminant is completed, the print is complete.

[7] The print is ejected from the printer.

Sequence of Operation - RECEIVER Feed/Picking

[1] The printer receives a print command.

[2] The DONOR TAKE-UP and SUPPLY MOTORS turn on. This causes the DONOR to pass the depleted cyan from the previous print and advance to yellow. The DONOR TAKE-UP and SUPPLY MOTORS turn off. The DONOR BRACKET BAR CODE ASSEMBLY reads the DONOR BAR CODE.

[3] The HEAD POSITION MOTOR turns on, moving the THERMAL HEAD in the load position to allow the DONOR and RECEIVER to help in the RECEIVER-loading process. (The HEAD POSITION MOTOR turns off.)

[4] The PICK MOTOR turns on, causing the RECEIVER to be picked into the printer paper path (the CHUTE).

[5] As the RECEIVER is being picked, the CAPSTAN MOTOR, PLATEN BRAKE, and the DONOR TAKE-UP and SUPPLY MOTORS are turned on. The DONOR advances, allowing the RECEIVER to enter the NIP and reach the LEAD EDGE SENSOR.

[6] The PINCH MOTOR turns on, PINCHING the RECEIVER in between the PINCH ROLLER and CAPSTAN TRACTION ROLLER.

[7] At this point, the PICK MOTOR, CAPSTAN MOTOR, PLATEN BRAKE, and the DONOR TAKE-UP and SUPPLY MOTORS turn off. The PICK MOTOR reverses to return the PICKER to its original position.

[8] The CAPSTAN MOTOR turns on in reverse at ≈ 5 times the print speed to position the RECEIVER for the yellow transfer. The THERMAL HEAD reaches the operating temperature and the image data is obtained.

[9] The DONOR TAKE-UP and SUPPLY MOTORS are sent pulses in reverse to move the DONOR to the start of the yellow patch.

[10] The CAPSTAN MOTOR and the DONOR TAKE-UP and SUPPLY MOTORS turn off.

[11] The THERMAL HEAD POSITION MOTOR turns on and the THERMAL HEAD moves into the engage position and turns off.

Sequence of Operation - Yellow Transfer

[1] The CAPSTAN MOTOR and DONOR TAKE-UP and SUPPLY MOTORS are turned on simultaneously.

[2] The CAPSTAN MOTOR moves in the forward direction to prevent GEAR TRAIN backlash and for correct registration.

[3] The TAKE-UP MOTOR adjusts the DONOR tension during the print cycle.

[4] The DONOR SUPPLY MOTOR operates in reverse to cause a reduction of variability in brake slip friction.

[5] The yellow section of the image is printed.

[6] Once the transfer of image data is complete and the DONOR and RECEIVER are separated, the CAPSTAN and DONOR MOTORS turn off.

[7] The HEAD POSITION MOTOR turns on and moves the THERMAL HEAD back into the load position and turns off.

[8] The CAPSTAN MOTOR turns on in reverse at ≈ 5 times the print speed to rewind the RECEIVER to the correct position.

[9] At the same time, the CAPSTAN and DONOR MOTORS are turned on to advance the DONOR to the magenta patch. The RECEIVER rewind is complete and the DONOR is at the magenta patch.

[10] The CAPSTAN and DONOR MOTORS turn off.

Sequence of Operation - Magenta Transfer

[1] The THERMAL HEAD POSITION MOTOR turns on and the THERMAL HEAD moves into the engage position and turns off.

[2] The CAPSTAN MOTOR and the DONOR MOTORS are turned on at the same time.

[3] The CAPSTAN MOTOR moves in the forward direction to remove the GEAR TRAIN backlash.

[4] The TAKE-UP MOTOR adjusts the DONOR tension during the print cycle.

[5] The DONOR SUPPLY MOTOR operates in reverse to cause a reduction of variability in brake slip friction.

[6] The magenta section of the image is printed.

[7] Once the transfer of image data is complete and the DONOR and RECEIVER are separated the CAPSTAN and DONOR MOTORS turn off.

[8] The HEAD POSITION MOTOR turns on and moves the THERMAL HEAD back into the LOAD position and turns off.

[9] The CAPSTAN MOTOR turns on in reverse at ≈ 5 times the print speed to rewind the RECEIVER to the correct position.

[10] Simultaneously, the CAPSTAN and DONOR MOTORS are turned on to advance the DONOR to the cyan patch. The RECEIVER rewind is complete and the DONOR is at the cyan patch.

[11] The CAPSTAN and DONOR MOTORS turn off.

Sequence of Operation - Cyan Transfer

[1] The THERMAL HEAD POSITION MOTOR turns on and the THERMAL HEAD moves into the engage position and turns off.

[2] The CAPSTAN MOTOR and the DONOR MOTORS are turned on at the same time.

[3] The CAPSTAN MOTOR moves in the forward direction to remove the GEAR TRAIN backlash.

[4] The TAKE-UP MOTOR adjusts tension during the print cycle.

[5] The DONOR SUPPLY MOTOR operates in reverse to cause a reduction of variability in brake slip friction.

[6] The cyan section of the image is printed.

Lamination Cycle

[1] The THERMAL HEAD POSITION MOTOR turns off and the THERMAL HEAD moves into the engaged position and turns off.

[2] The DONOR MOTOR operates in rewind to cause a variability reduction in brake slip friction.

[3] The TAKE-UP MOTOR adjusts the tension during the lamination cycle.

[4] The STEPPER rewinds for a minute, then moves forward.

[5] The DONOR is advanced to the yellow patch and the CAPSTAN and DONOR MOTORS turn off.

Eject Cycle

[1] Once the transfer of image data is complete and the DONOR and RECEIVER are disconnected, the RECEIVER edge is advanced past the CHUTE. The CAPSTAN and DONOR MOTORS turn off.

[2] The HEAD POSITION MOTOR turns on and moves the THERMAL HEAD into the retract position.

[3] Simultaneously, the PINCH MOTOR opens the PINCH and the DONOR SUPPLY MOTOR turns on in reverse to tension the DONOR.

[4] With the PLATEN BRAKE on, the CAPSTAN MOTOR turns on at 10 times the print speed to eject the print.

[5] The print cycle is complete when the print is ejected and the CAPSTAN DRIVE and the PLATEN BRAKES are turned off.

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MULTIPLE CONNECTOR Removal

Some of the CONNECTORS on the CONTROLLER PRINTED CIRCUIT BOARD are MULTIPLE CONNECTORS. MULTIPLE CONNECTORS are CONNECTORS of individual components that are inserted into a larger CONNECTOR, which is then inserted into the MALE CONNECTOR on the CONTROLLER PRINTED CIRCUIT BOARD. See the list below.

- CONNECTORS
  - P1
  - P2
  - P4
  - P6
  - P8
  - P9
  - P10
  - P11

To disconnect a MULTIPLE CONNECTOR from the CONTROLLER PRINTED CIRCUIT BOARD, do the procedure below:

[1] To remove the MULTIPLE CONNECTOR from the CONTROLLER PRINTED CIRCUIT BOARD, compress the LOCKING TAB and remove the MULTIPLE CONNECTOR from the CONTROLLER PRINTED CIRCUIT BOARD CONNECTOR.

[2] With the LOCKING TAB facing up, insert a small FLAT-BLADE SCREWDRIVER in between the top of the MAIN CONNECTOR and the MINI CONNECTOR.

[3] Remove the MINI CONNECTOR; this will allow access to the MINI CONNECTOR and its components.

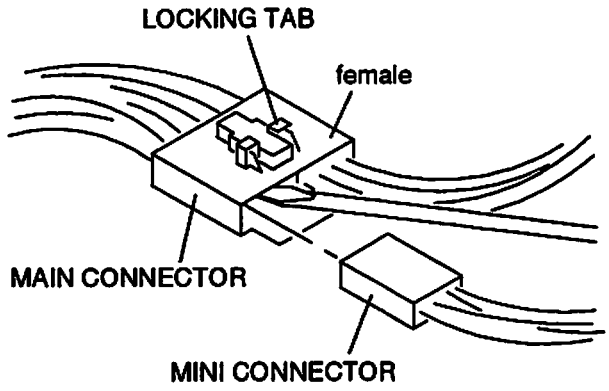

Figure 62

CONNECTOR Chart

See the following page to locate all CONNECTORS in the printer.

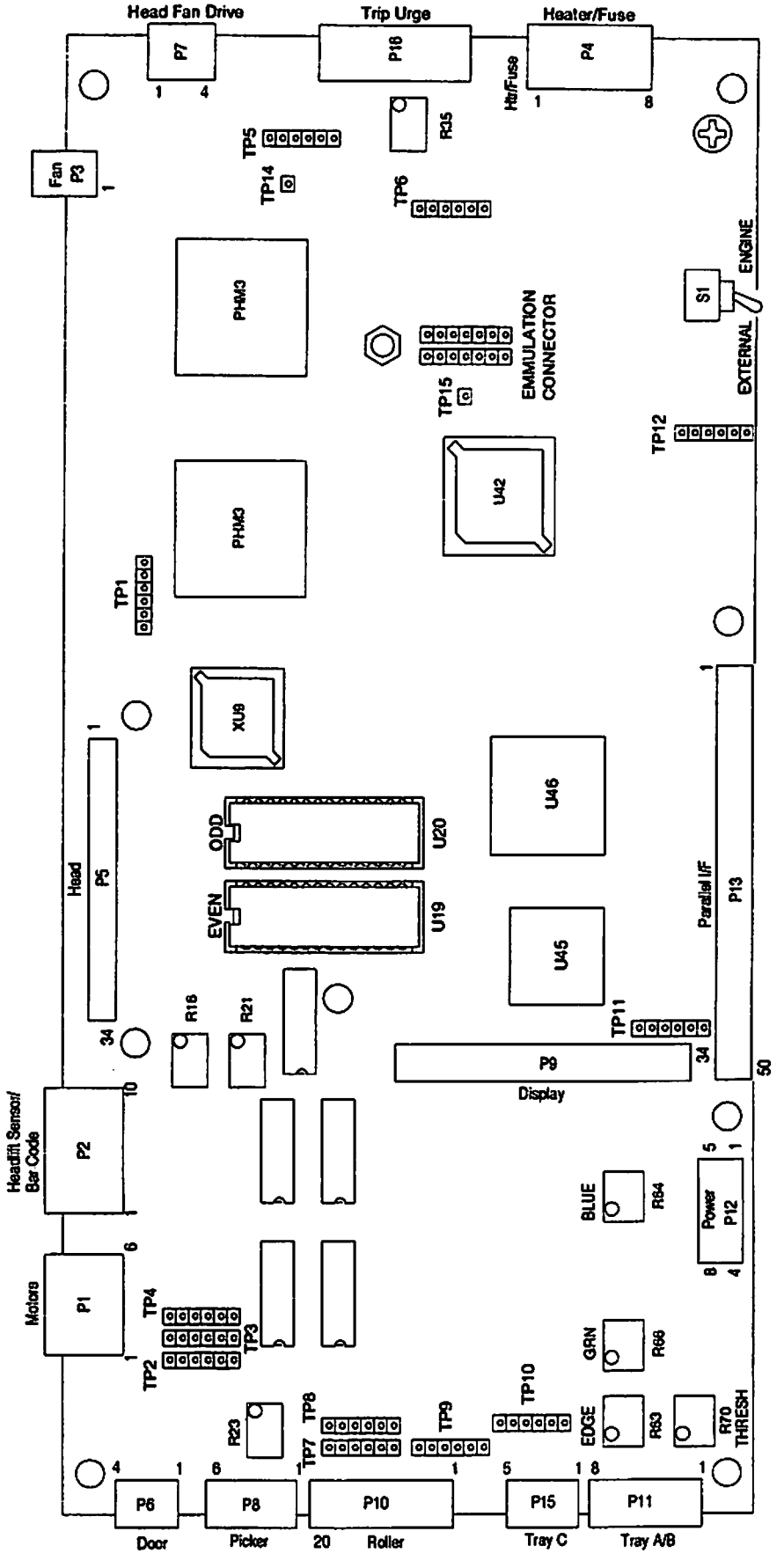

Figure 63 CONTROLLER BOARD Component Locations

DOOR COVER Removal

CAUTION

- Do not open the DOOR during the print cycle or de-energize the printer.
- Remove the DONOR before doing any procedure.
- Do not force or slam the DOOR ASSEMBLY during this or any procedure.

[1] De-energize the printer.

[2] Open the DOOR and lift it up.

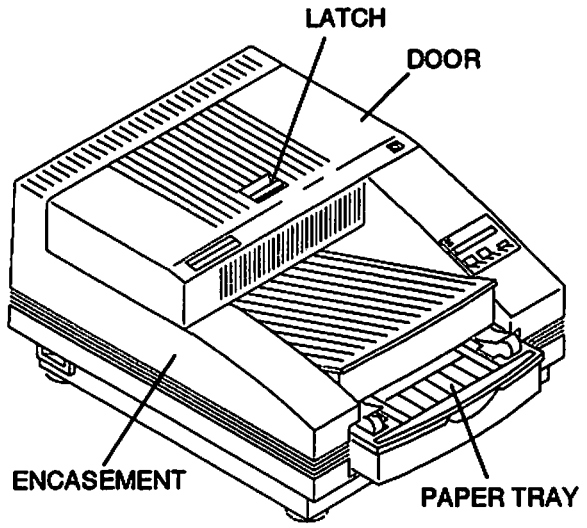

Figure 64

[3] Locate and remove the 2 *Phillips* HEAD SCREWS holding the DOOR COVER to the DOOR ASSEMBLY.

[4] Move the top of the DOOR COVER toward the back of the printer.

[5] Slide the DOOR COVER down and remove it.

[6] Remove the DOOR COVER.

[7] Remove the LATCH.

[8] Check the 3 notches inside the DOOR COVER for damage. If the notches are damaged or missing, install a new DOOR COVER.

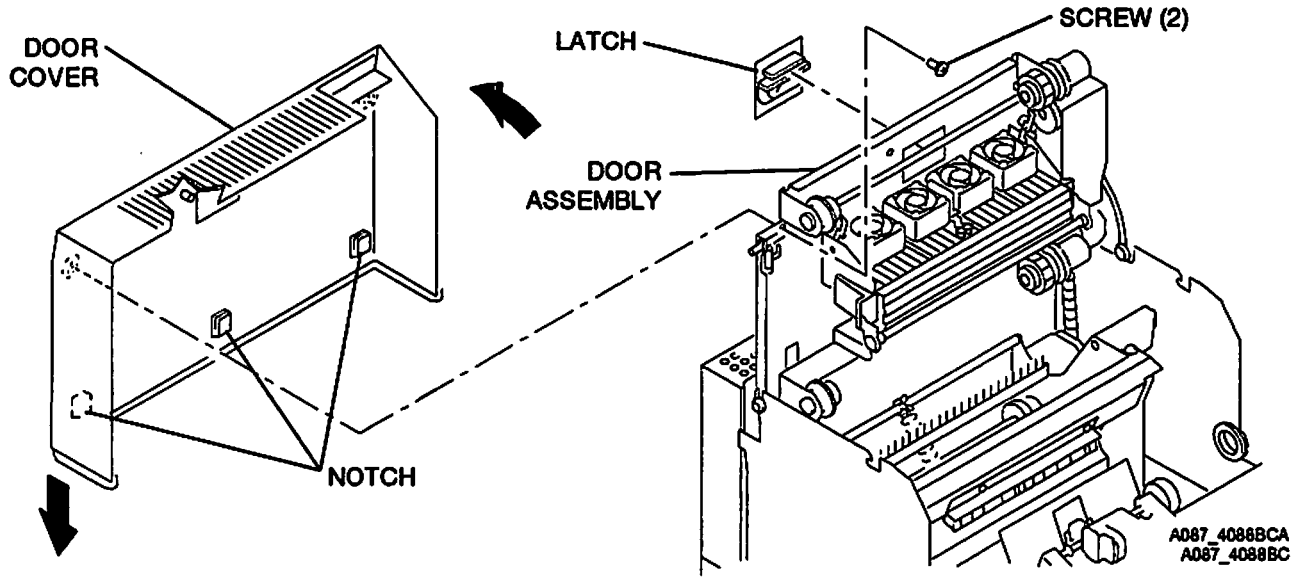

Figure 65

CAUTION

Remove the DONOR. Do not touch the DONOR; fingerprints can contaminate the DONOR and cause print artifacts.
You must use the correct SCREW (1/4 in. x 6-32 MACHINE SCREW) for installation, or you could cause damage to the DOOR COVER.

[1] Locate the notches and LOCATOR on the inside of the DOOR COVER.

[2] Install the LATCH onto the DOOR LATCH SHAFT.

[3] Slide the DOOR COVER on the DOOR ASSEMBLY.

[4] Pull up on the DOOR COVER to seat the notches and seat the LOCATOR into the DOOR ASSEMBLY.

[5] Install the 2 SCREWS to hold the DOOR COVER to the DOOR ASSEMBLY.

[6] Check that the correct SCREWS were installed to hold the DOOR COVER (check for protrusions of the plastic).

[7] Operate the LATCH and close the DOOR to check for correct operation.

IMPORTANT

To make an ENGINE test print, the S1 SWITCH on the CONTROLLER CIRCUIT BOARD must be in the engine mode. After making the ENGINE test print, de-energize the printer and set the S1 SWITCH on the CONTROLLER BOARD to EXT.

[8] Make an ENGINE test print.

[9] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY Closure procedure on page 7-28.

[10] Make a front end test print.

ENCASEMENT Removal

[1] Remove the PAPER TRAY.

[2] Do the DOOR COVER removal procedure on page 7-6.

[3] Close the DOOR.

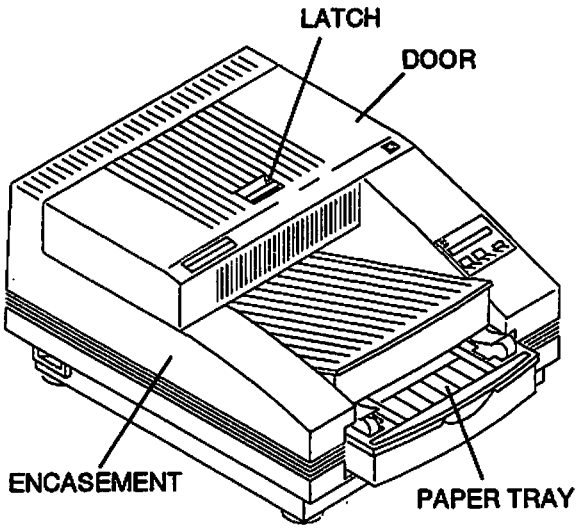

Figure 66

[4] Remove the 2 *Phillips* HEAD SCREWS located on the right and left sides of the ENCASEMENT on the ENCLOSURE WALL.

IMPORTANT

Before you remove the ENCASEMENT, observe the position of the LEAD EDGE SENSOR. Do not damage the parts. Do not cause damage to the wires on the right side of the ENCASEMENT.

[5] Slide the ENCASEMENT 1/2 in forward.

[6] Pull the ENCASEMENT up sliding the notches in the left and right sides of the ENCASEMENT over the MAIN DOOR SHAFT.

[7] Remove the ENCASEMENT.

[8] Check the LOCKING TABS on the inside of the left and right side of the ENCASEMENT for damage. See the inset box in the Figure below.

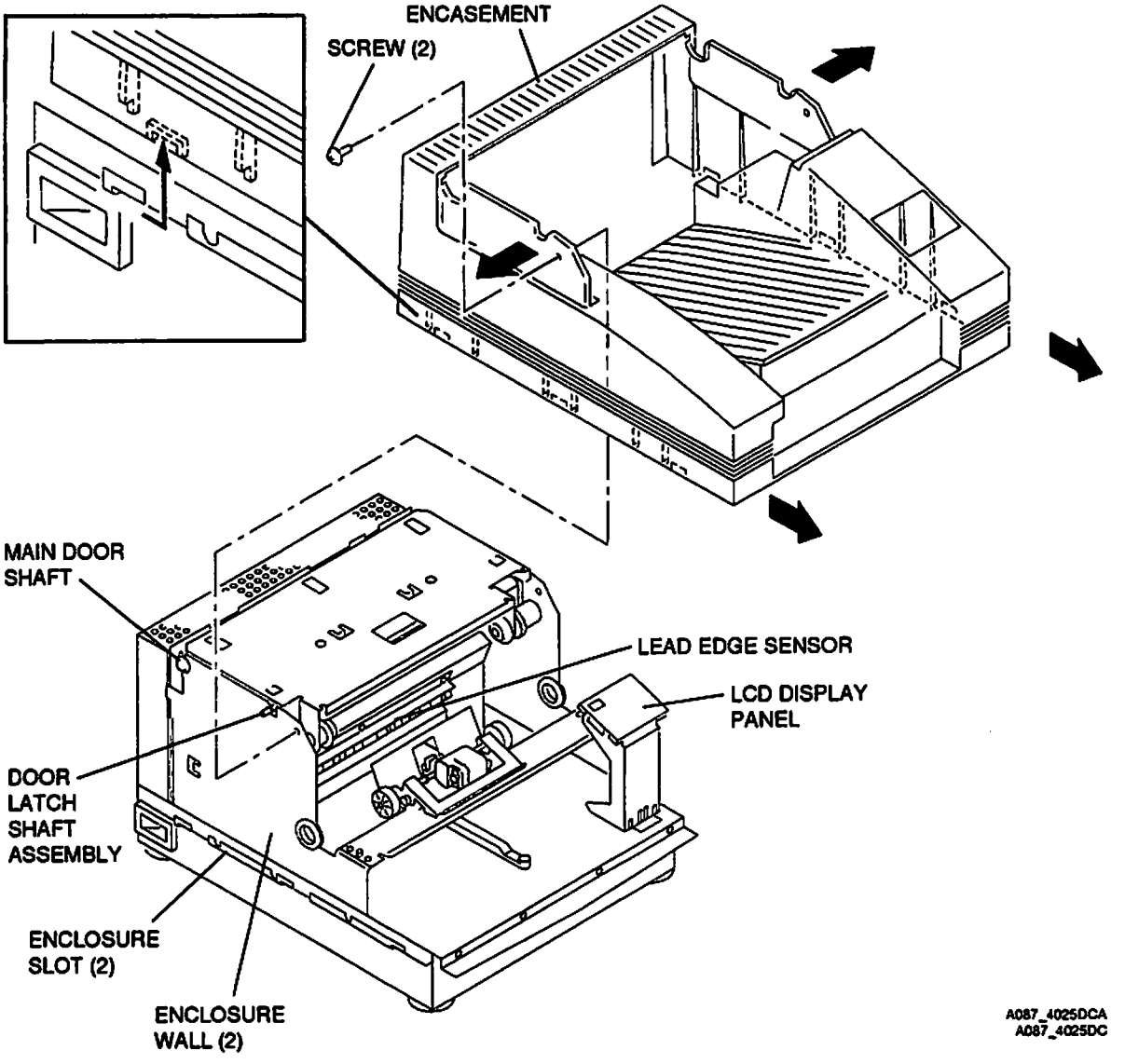

Figure 67 ENCASEMENT Removal

IMPORTANT

Before you remove the ENCASEMENT, observe the position of the LEAD EDGE SENSOR. Do not damage the parts.

[1] Locate the MAIN DOOR SHAFT and LCD DISPLAY PANEL.

[2] Remove the PAPER TRAY and DONOR if necessary.

CAUTION

Check that the LOCKING TABS and PINS (not shown) are not damaged before installation.

[3] Place the left and right side walls of the ENCASEMENT over the printer.

[4] Slide the notches on the left and right side of the ENCASEMENT over the MAIN DOOR SHAFT.

[5] Check that the left and right side of the ENCASEMENT are on the outside of the BASE ENCLOSURE RAILS.

[6] Align the LOCKING TABS in the slots on the BASE ENCLOSURE RAILS and push down.

[7] Seat the ENCASEMENT by pushing back 1/2 in.

[8] Install the 2 *Phillips* HEAD SCREWS located on the right and left sides of the ENCASEMENT on the ENCLOSURE WALL.

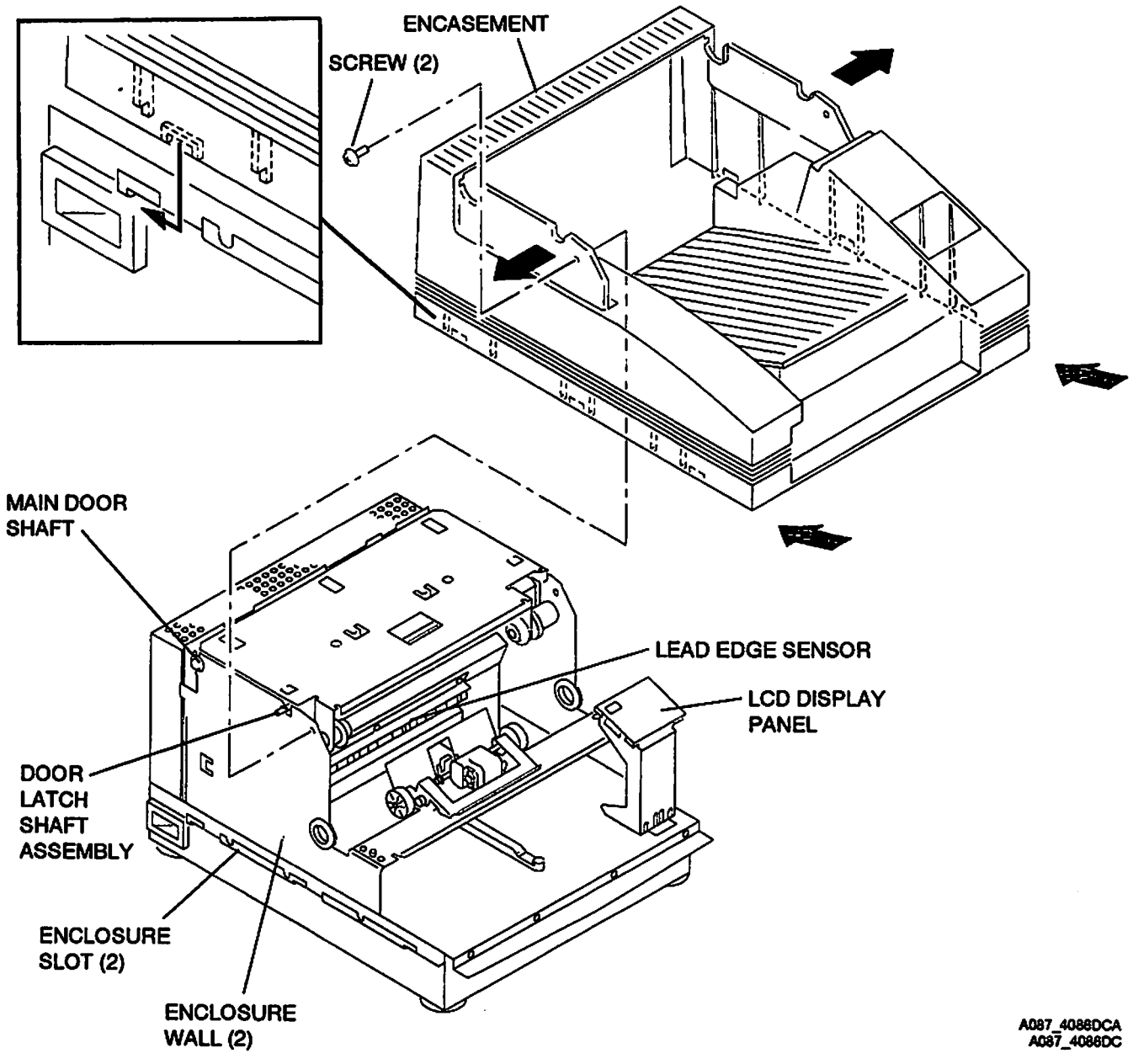

Figure 68 ENCASEMENT Installation

TRAY TYPE SENSOR ASSEMBLY Removal

[1] Do the DOOR COVER removal page 7-6.

[2] Do the ENCASEMENT ASSEMBLY removal on page 7-8.

[3] Do the CONTROLLER ENCLOSURE PRINTED CIRCUIT BOARD access procedure on page 7-25.

[4] Remove the 2 *PHILLIPS* SCREWS holding the 2 different TRAY TYPE SENSORS.

IMPORTANT

It is not necessary to remove both of the TRAY TYPE SENSOR sets, only remove the SENSOR with that has the malfunction.

[5] Disconnect P11 and P15 from the CONTROLLER PRINTED CIRCUIT BOARD.

[6] Remove the HARNESS from P11 and P15 to the TRAY TYPE SENSORS along the BASE ENCLOSURE WALLS.

[7] Remove the TRAY TYPE SENSORS ASSEMBLY.

TRAY TYPE SENSOR ASSEMBLY Installation

[1] Do the TRAY TYPE SENSOR removal on page 7-12 in reverse order.

[2] Install the TRAY and use the Diagnostic section DIAG: RECEIVER, RCVR: TRAY to check for correct operation. Check that the TRAY matches the LCD (A, A4, SA, SA4),

IMPORTANT

To make an ENGINE test print, the S1 SWITCH on the CONTROLLER CIRCUIT BOARD must be in the engine mode. After making the ENGINE test print, de-energize the printer and set the S1 SWITCH on the CONTROLLER BOARD to EXT.

[3] Make an ENGINE test print.

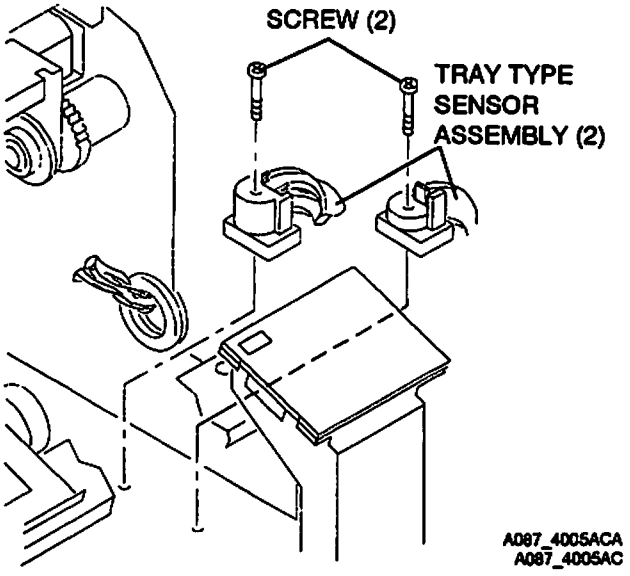

Figure 69 TRAY TYPE SENSOR ASSEMBLY

PICKER ASSEMBLY Removal

[1] Remove the PAPER TRAY.

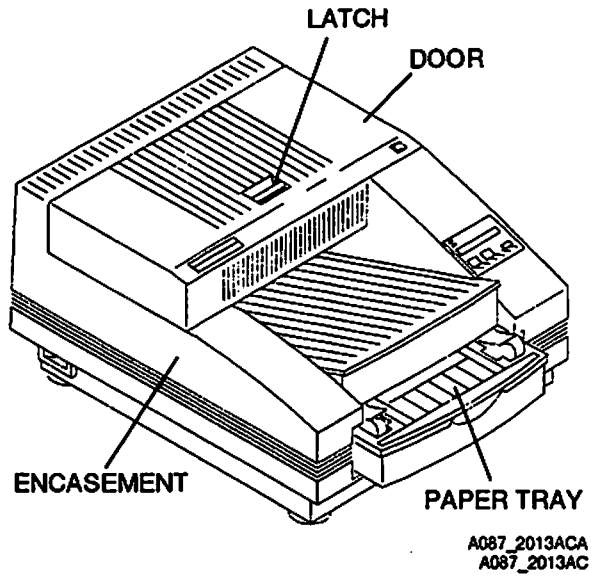

Figure 70

[2] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY access procedure on page 7-25.

[3] Do the DOOR COVER removal procedure on page 7-6.

[4] Do the ENCASEMENT removal procedure on page 7-8.

CAUTION

- Do not pull the DRAWER out more than 15.24 cm (6 in.) or you may cause damage to the printer. Do not pinch the wires when sliding the DRAWER ASSEMBLY out.
- It is necessary to remove the DRAWER STRAP and CABLE before sliding the DRAWER out, or you will cause damage to the printer.

[5] Slide the DRAWER ASSEMBLY out 15.24 cm (6 in.) by the KNOBS.

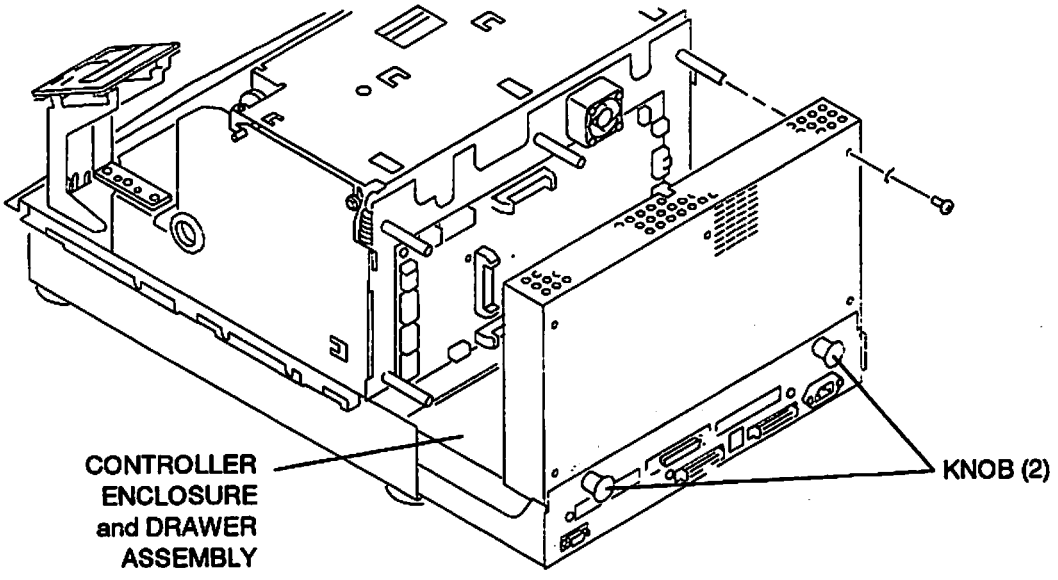

Figure 71

[6] Remove CONNECTOR P8 from the CONTROLLER PRINTED CIRCUIT BOARD.

[7] Remove the PICKER HARNESS and GROMMET from the side wall of the BASE.

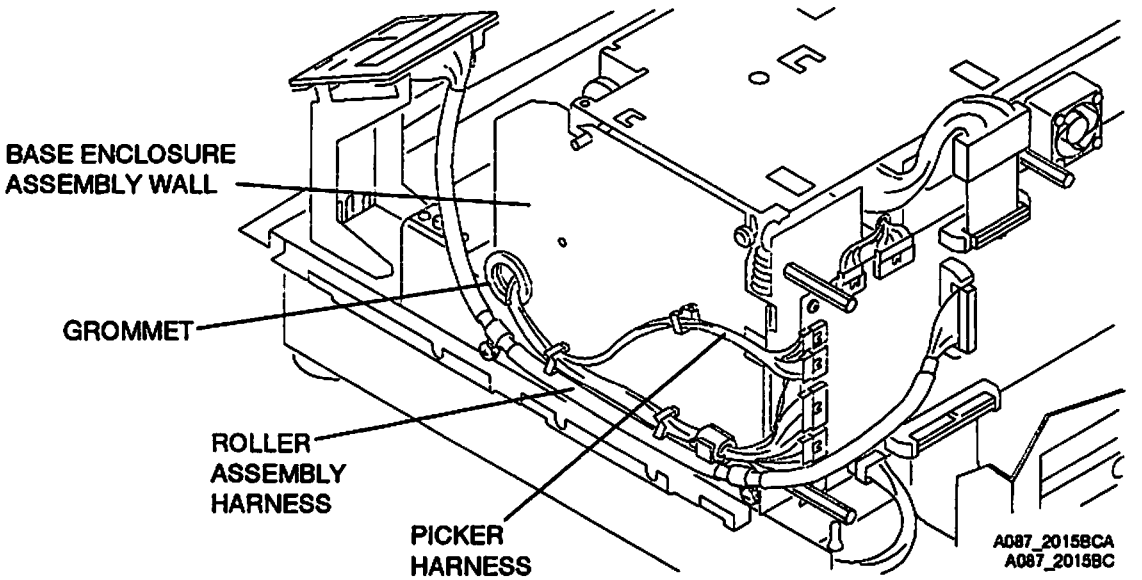

Figure 72

[8] Remove the 4 SCREWS holding the PICKER ASSEMBLY.

[9] Remove the PICKER ASSEMBLY.

IMPORTANT

The PICKER SHIMS indicate that Modification 3 has been installed.

[10] Remove the 2 PICKER SHIMS if they are installed.

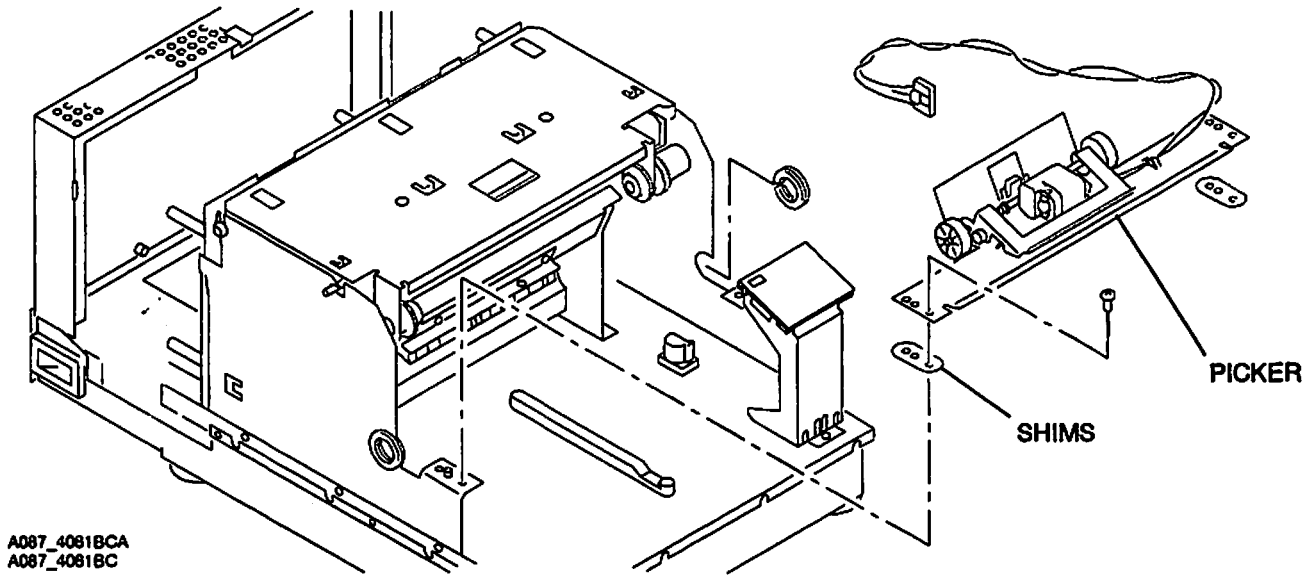

Figure 73

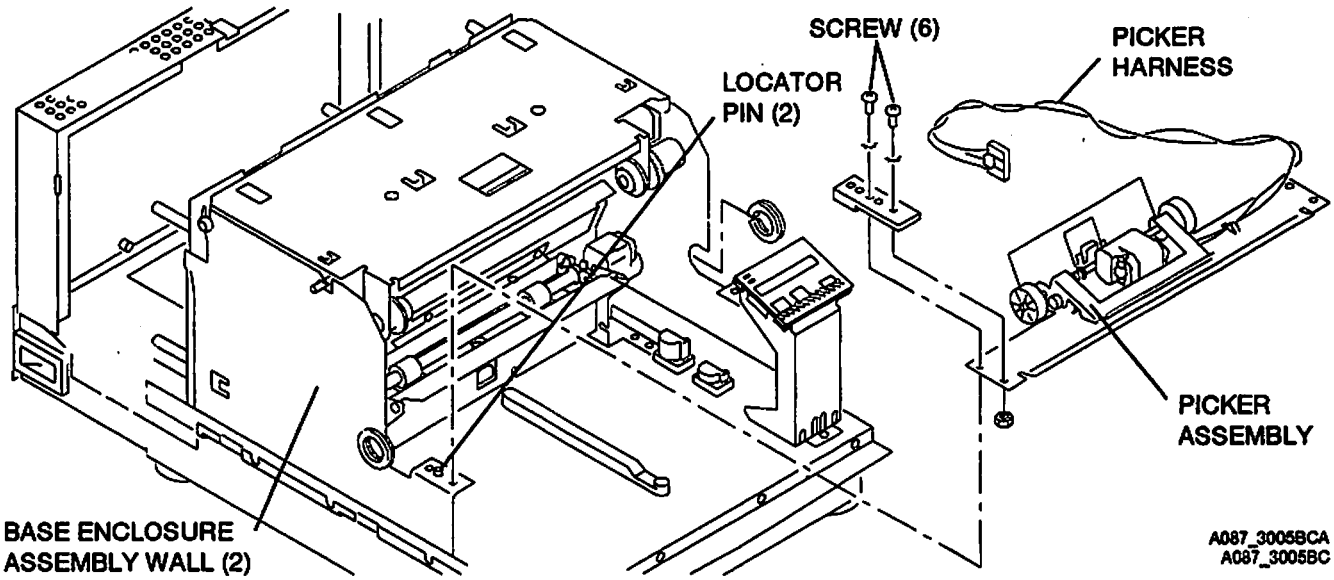

Figure 74

PICKER ASSEMBLY Installation

[1] If the PICKER SHIMS were installed, install the PICKER SHIMS under the PICKER BRACKET.

[2] Go to step 3.

[3] Place the PICKER ASSEMBLY over the LOCATOR PINS on the left and right sides of the ENCLOSURE WALLS.

[4] Insert the 4 *Phillips* HEAD SCREWS into the BASE ENCLOSURE ASSEMBLY WALL.

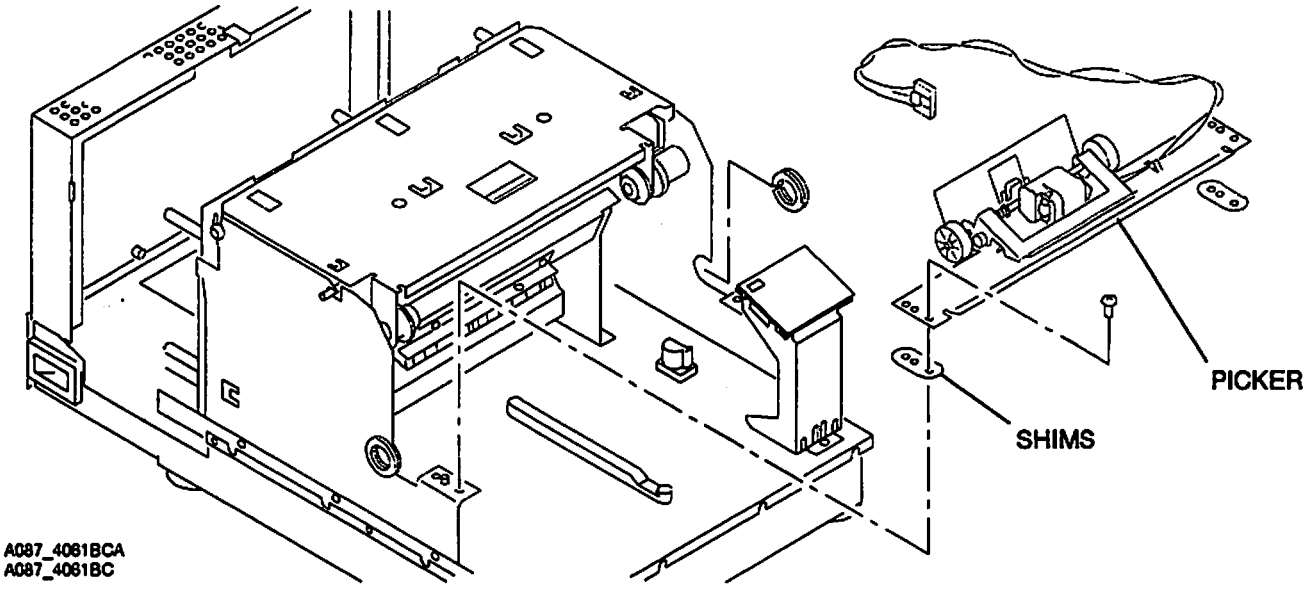

Figure 75

[5] Route the PICKER HARNESS through the GROMMET.

[6] Fasten the PICKER HARNESS to the side wall of the BASE.

[7] Connect the PICKER HARNESS CONNECTOR to P8 on the CONTROLLER PRINTED CIRCUIT BOARD.

[8] Do the RECEIVER TYPE SENSOR adjustments procedure on page 8-6.

[9] Install the PAPER TRAY and DONOR.

[10] Do the following diagnostics tests: DIAG: RECEIVER (TRAY and TYPE), PICK/EJECT.

IMPORTANT

To make an ENGINE test print, the S1 SWITCH on the CONTROLLER CIRCUIT BOARD must be in the engine mode. After making the ENGINE test print, de-energize the printer and set the S1 SWITCH on the CONTROLLER BOARD to EXT.

[11] Make an ENGINE test print.

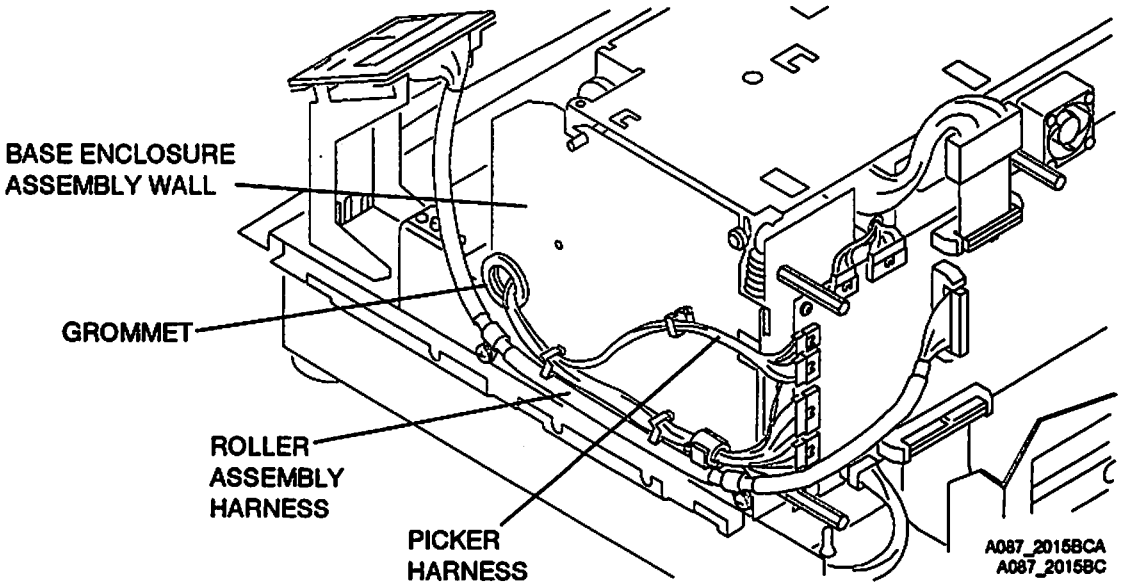

Figure 77

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TRAY GUIDE Removal

[1] Locate and remove the 2 *Phillips* HEAD SCREWS holding the TRAY GUIDE.

[2] Remove the TRAY GUIDE.

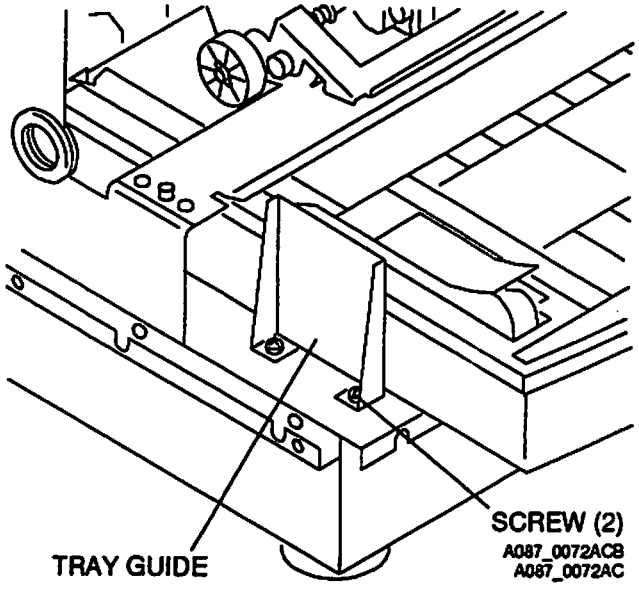


Figure 79

TRAY GUIDE Installation

[1] Do the TRAY GUIDE removal on page 7-20 in reverse order.

[2] Install the TRAY and use the Diagnostic section [DIAG: RECEIVER], [RCVR: TRAY] to check for correct operation.

IMPORTANT

To make an ENGINE test print, the S1 SWITCH on the CONTROLLER CIRCUIT BOARD must be in the engine mode. After making the ENGINE test print, de-energize the printer and set the S1 SWITCH on the CONTROLLER BOARD to EXT.

[3] Make an ENGINE test print.

ROLLER ASSEMBLY Removal

[1] Remove the PAPER TRAY.

[2] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY access procedure on page 7-25.

[3] Do the DOOR COVER removal procedure on page 7-6.

[4] Do the ENCASEMENT removal procedure on page 7-8.

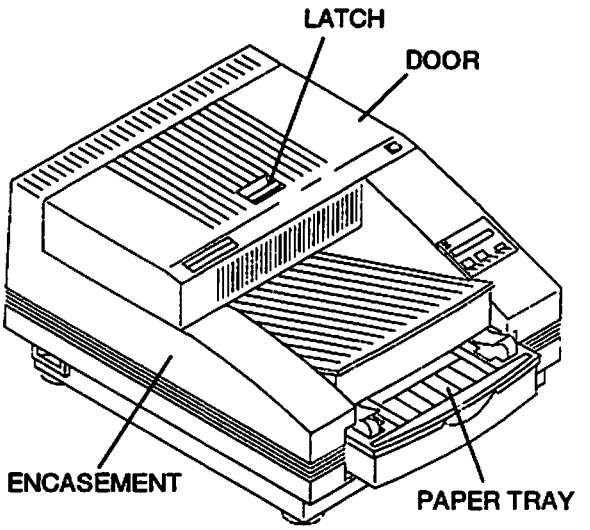


Figure 80

[5] Go to step 6.

[6] Remove the *Phillips* HEAD SCREW holding the ROLLER ASSEMBLY to the right BASE ENCLOSURE WALL.

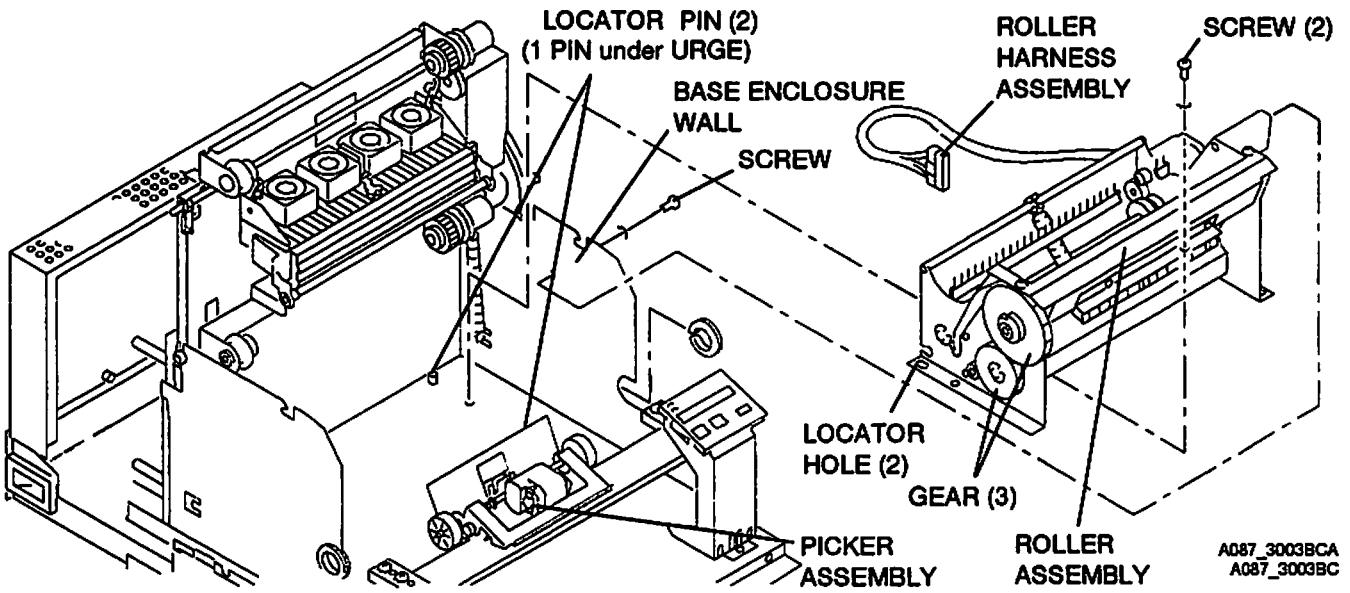


Figure 81

[7] Use a MAGNETIC #2 *Phillips* HEAD SCREWDRIVER with a shaft length of ≈ 30.48 cm (12 in.) to locate and remove the 2 SCREWS from the right side, and 2 SCREWS from the left side of the ROLLER ASSEMBLY.

IMPORTANT

Observe the positions of the GEARS on the left side of the ROLLER ASSEMBLY.
Do not cause damage to the GEARS during removal or installation. If the GEAR TEETH have damage, this could cause a STEPPER MOTOR or STEPPER GEAR artifact.

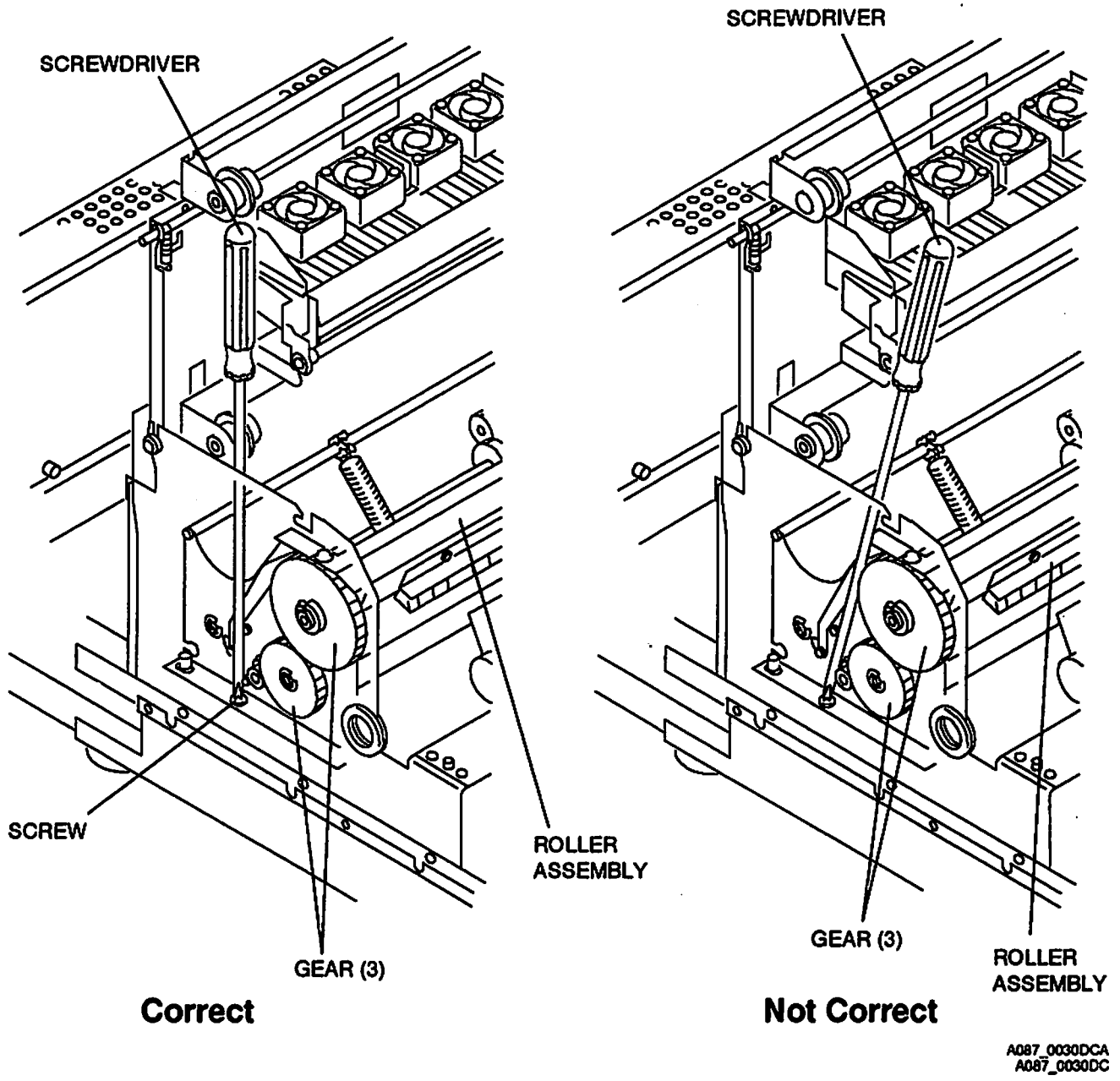


Figure 82

[8] Remove the GROMMET and ROLLER ASSEMBLY HARNESS from the ENCLOSURE WALL.

[9] Remove CONNECTOR P10 from the CONTROLLER PRINTED CIRCUIT BOARD.

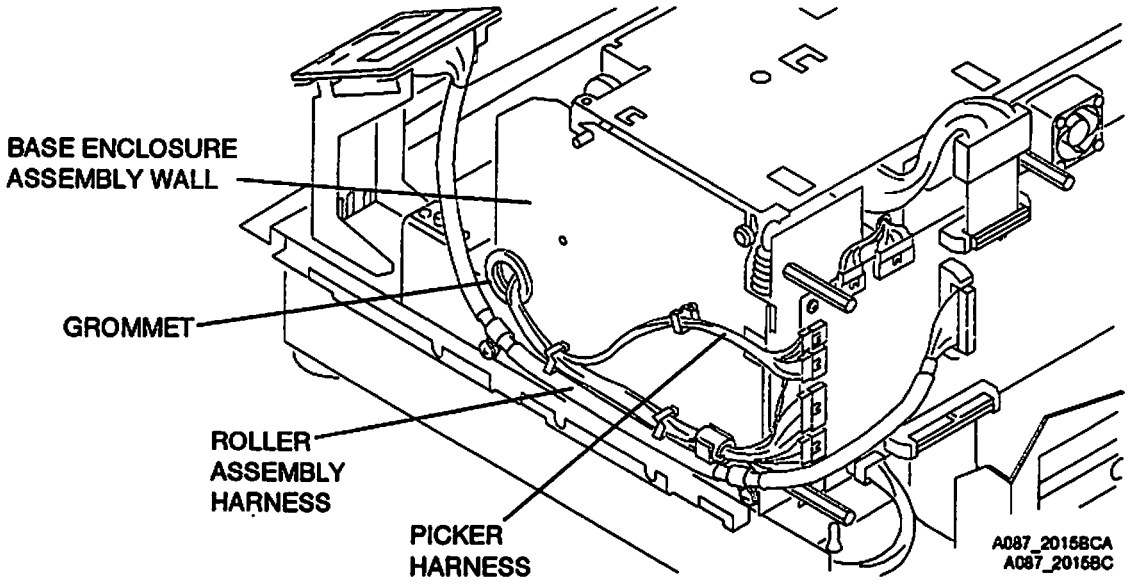


Figure 83

CAUTION

Do not hit the PICKER ASSEMBLY or catch the HARNESS WIRE ASSEMBLY.

[10] Remove the ROLLER ASSEMBLY by lifting up ≈ 2.54 cm (1 in.) and forward.

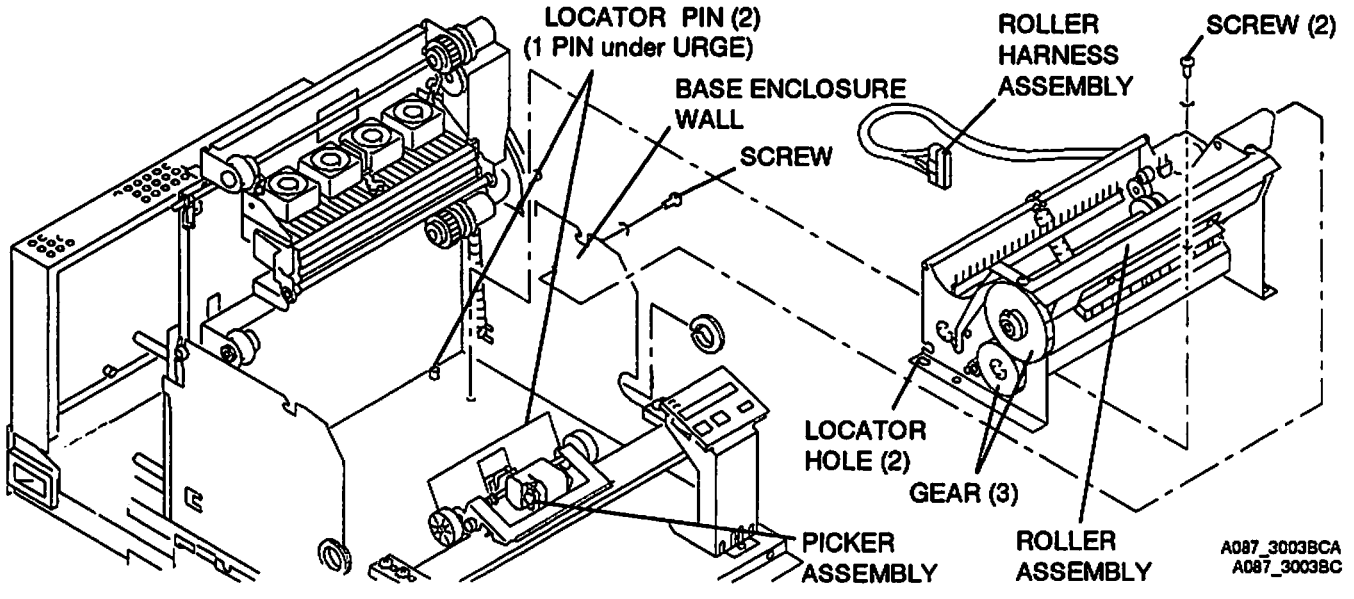


Figure 84

ROLLER ASSEMBLY Installation

IMPORTANT

- Observe the LOCATOR PINS on the BASE ASSEMBLY.
- Observe the positions of the GEARS on the left side of the ROLLER ASSEMBLY. Do not cause damage to the GEARS during removal or installation. If the GEAR TEETH have damage, this could cause a STEPPER MOTOR or STEPPER GEAR artifact.

[1] Locate the LOCATOR holes on the right and left side on the ROLLER ASSEMBLY.

[2] Install the ROLLER ASSEMBLY by aligning the LOCATOR holes on the ROLLER ASSEMBLY and the LOCATOR PINS on the BASE ENCLOSURE ASSEMBLY.

[3] Install the 2 SCREWS on the right side of the ROLLER ASSEMBLY.

[4] Install 2 SCREWS on the left side of the ROLLER ASSEMBLY.

[5] Install 1 SCREW to hold the ROLLER ASSEMBLY to the right ENCLOSURE WALL.

[6] Install the ROLLER ASSEMBLY HARNESS and GROMMET in the right ENCLOSURE WALL.

[7] Install CONNECTOR P10 into the CONTROLLER PRINTED CIRCUIT BOARD. See the CONTROLLER BOARD illustration.

[8] Do the DRIVE STEPPER MOTOR adjustment on page 8-9.

[9] Do the DONOR adjustment on page 8-10.

[10] Do the LEAD EDGE SENSOR adjustment on page 8-4.

[11] Do the following diagnostic tests: PINCH, STEP MOTOR, and PICK/EJECT.

IMPORTANT

To make an ENGINE test print, the S1 SWITCH on the CONTROLLER CIRCUIT BOARD must be in the engine mode. After making the ENGINE test print, de-energize the printer and set the S1 SWITCH on the CONTROLLER BOARD to EXT.

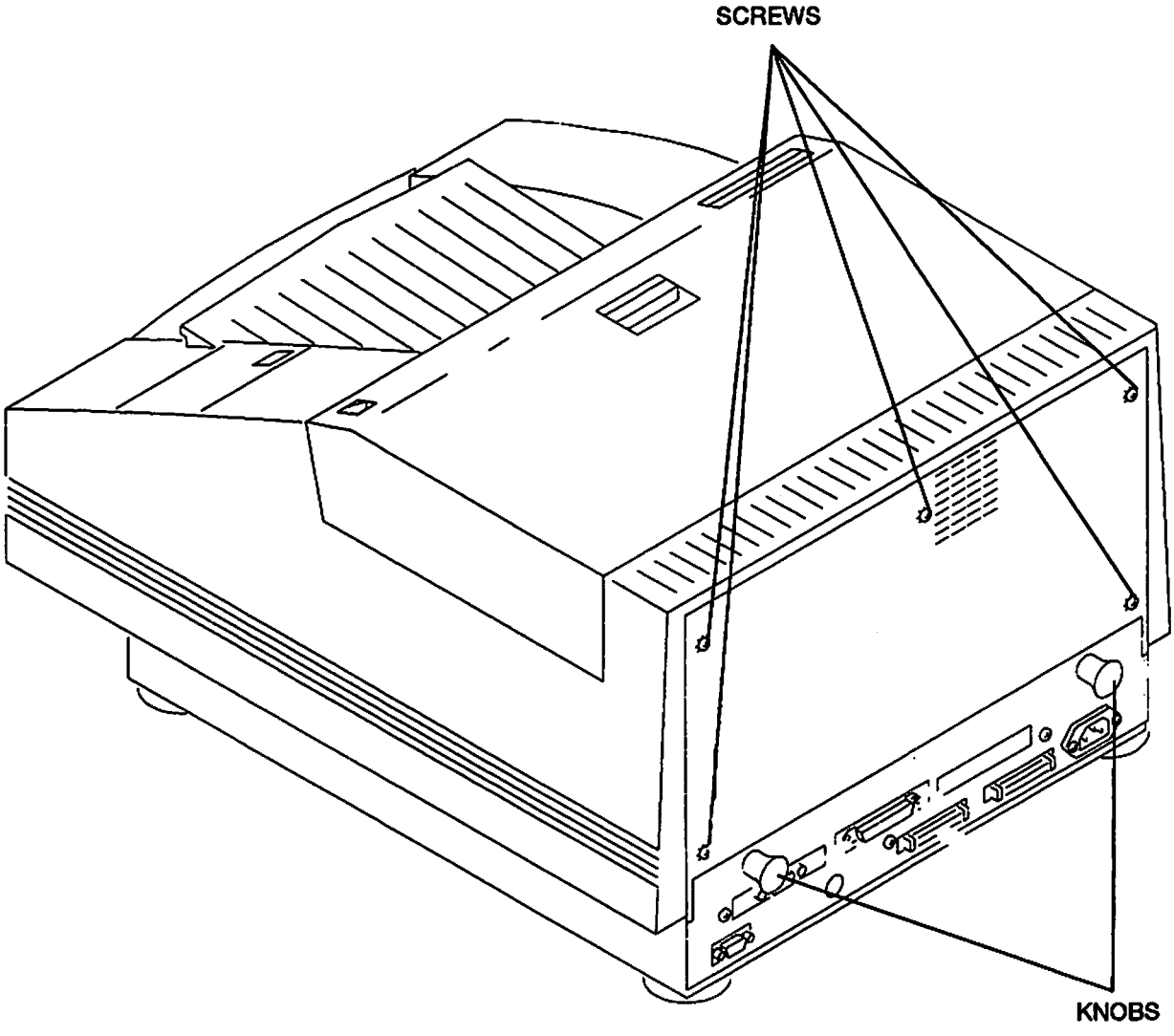
[12] Make an ENGINE test print.

CAUTION

Do not pull the DRAWER out more than 15.24 cm (6 in.) or you may cause damage to the printer.
Do not pinch the wires when sliding the DRAWER ASSEMBLY out.

[1] De-energize the printer.

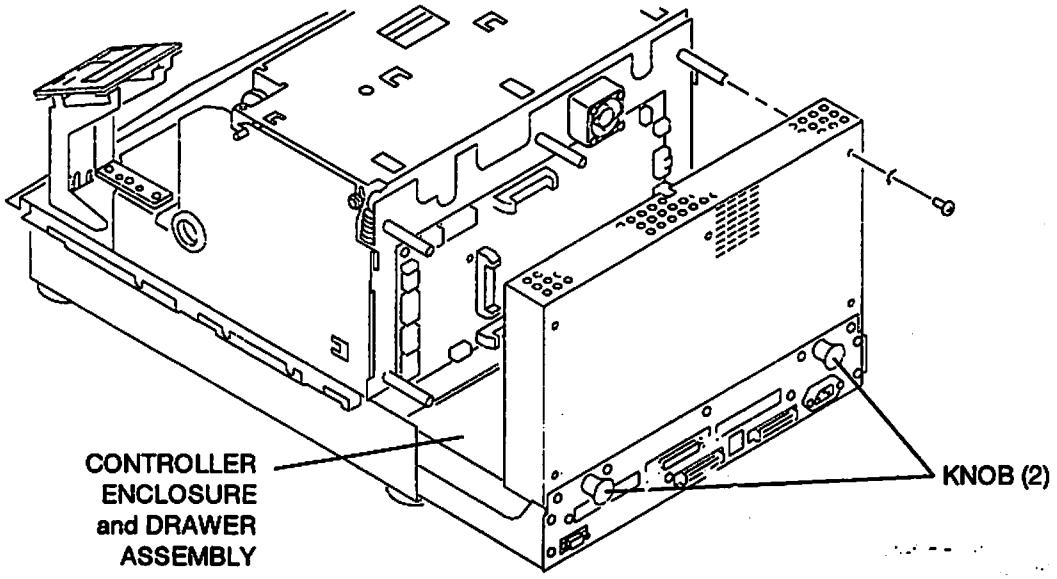
[2] Remove the 5 SCREWS from the REAR ENCLOSURE ASSEMBLY.



A087_4020DCA
A087_4020DC

Figure 85

[3] Use the KNOBS to slide the DRAWER ASSEMBLY out 5.24 cm (6 in.).



A087_3002BCA
A087_3002BC

Figure 86

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CONTROLLER ENCLOSURE and DRAWER ASSEMBLY Closure

[1] Install the DRAWER STRAP.

[2] Install the P13 CONNECTOR if necessary.

CAUTION

When closing the DRAWER, the THERMAL HEAD DATA CABLE and MOTOR BRACKET CABLES are sometimes pinched by the top of the ENCLOSURE. To prevent this, open the TOP COVER, which pulls the CABLES forward, then slide the DRAWER in.

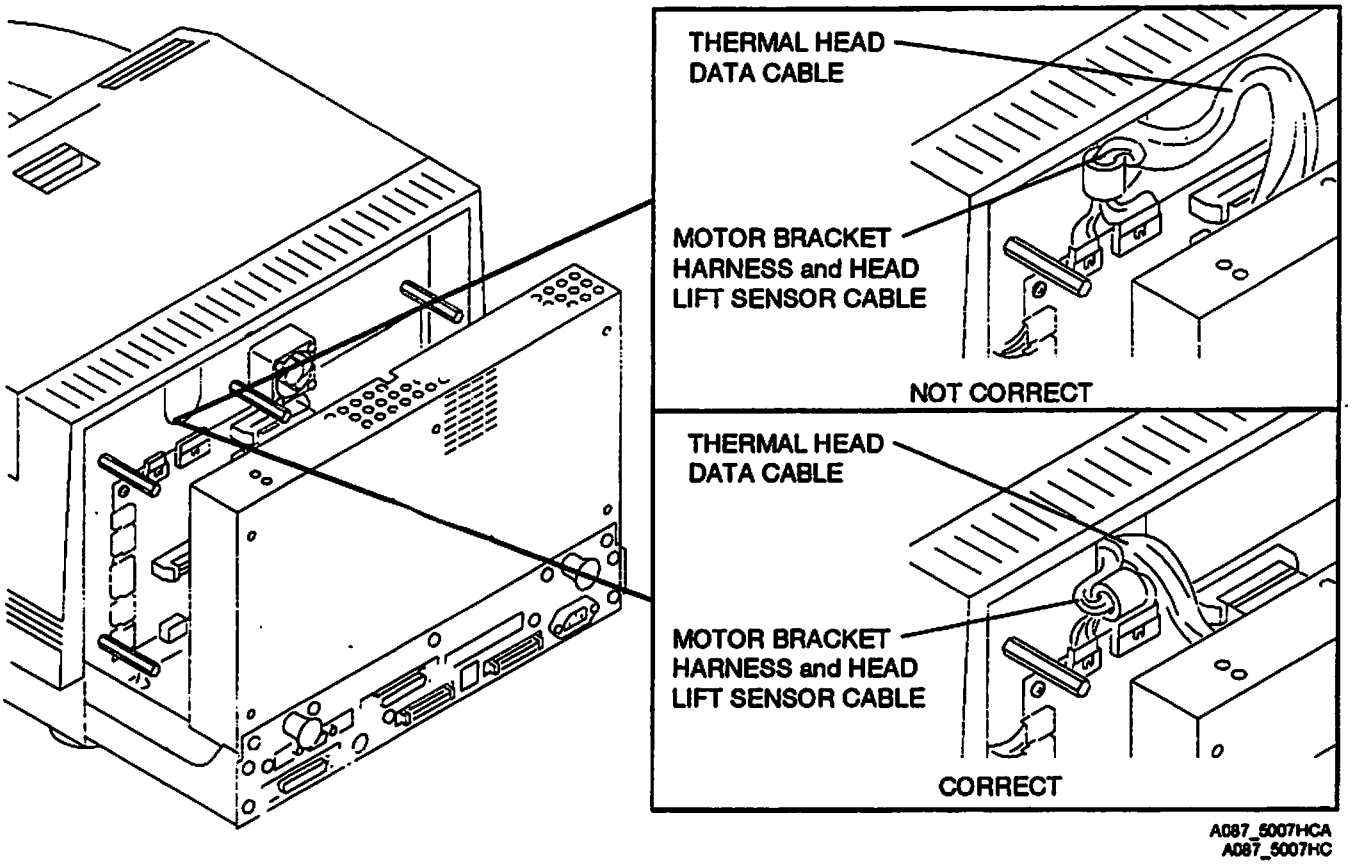

Figure 87 THERMAL HEAD DATA CABLE/MOTOR BRACKET HARNESS/THERMAL HEAD LIFT SENSOR CABLE

[3] Use the KNOBS to slide the DRAWER ASSEMBLY in 15.24 cm (6 in.).

CAUTION

Check that no wires are pinched in the CONTROLLER ENCLOSURE DRAWER.

[4] Install the 5 SCREWS from the REAR ENCLOSURE ASSEMBLY.

IMPORTANT

To make an ENGINE test print, the S1 SWITCH on the CONTROLLER CIRCUIT BOARD must be in the engine mode. After making the ENGINE test print, de-energize the printer and set the S1 SWITCH on the CONTROLLER BOARD to EXT.

[5] Make a test print.

LCD DISPLAY PANEL and BRACKET Removal

[1] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY access procedure on page 7-25.

[2] Disconnect the LCD DISPLAY PANEL CONNECTOR P9. See the Figure on page 7-5.

[3] Do the DOOR COVER removal procedure on page 7-6.

[4] Do the ENCASEMENT removal procedure on page 7-8.

[5] Remove 1 SCREW from the front of the LCD DISPLAY PANEL BRACKET.

[6] Slide the LCD DISPLAY PANEL BRACKET forward.

[7] Remove the 4 NUTS from under of the LCD DISPLAY PANEL BRACKET.

[8] Remove the LCD DISPLAY PANEL.

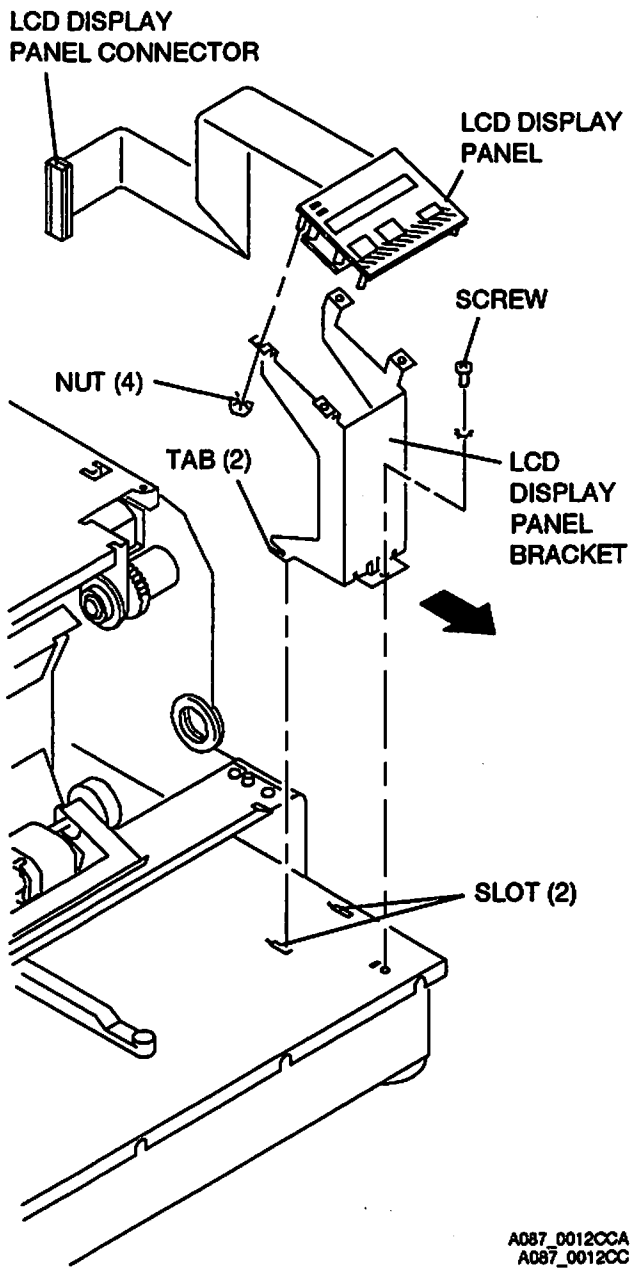

Figure 88

LCD DISPLAY PANEL and BRACKET Installation

[1] Fasten the LCD DISPLAY PANEL to the LCD DISPLAY BRACKET with 4 NUTS.

[2] Align the TABS in the LCD DISPLAY PANEL BRACKET to the SLOTS in the BASE ENCLOSURE ASSEMBLY.

[3] Slide the LCD DISPLAY PANEL BRACKET backward.

[4] Install 1 SCREW in the front of the LCD DISPLAY BRACKET.

[5] Install CONNECTOR P9 to the CONTROLLER PRINTED CIRCUIT BOARD.

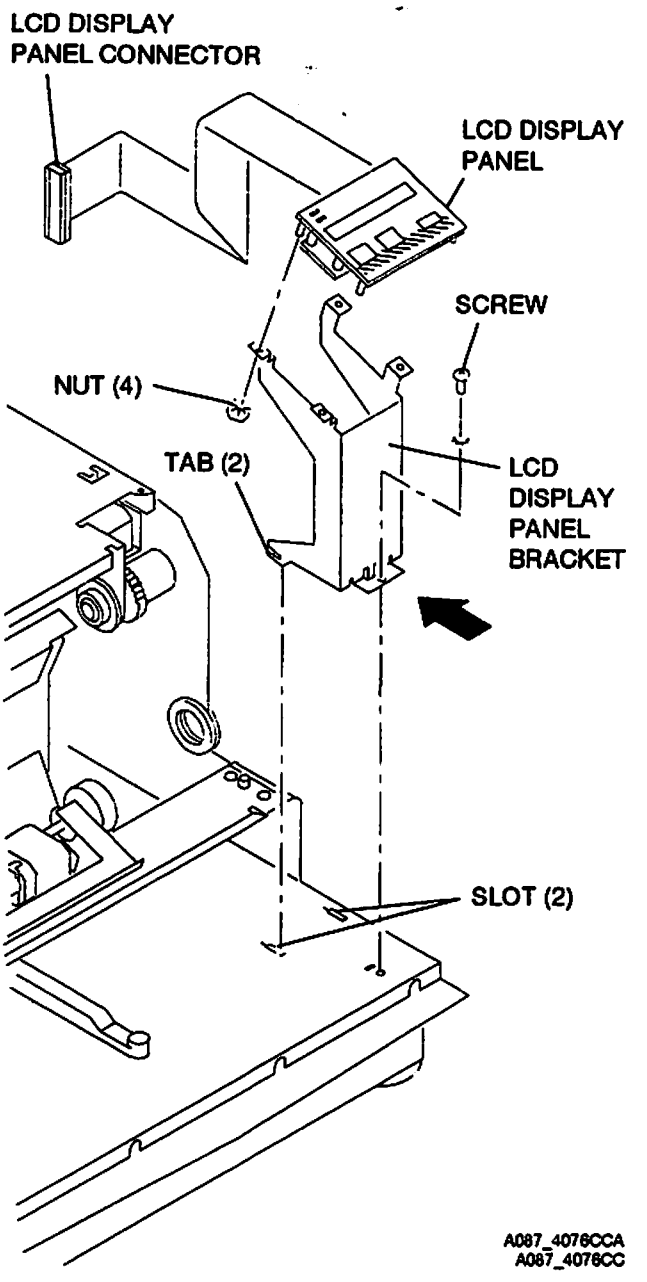

Figure 89

[6] Fasten the LCD DISPLAY PANEL CABLE to the right SIDE PANEL on the BASE ENCLOSURE ASSEMBLY WALL.

[7] Energize the printer.

[8] Access the Diagnostics.

[9] Use the LCD DISPLAY PANEL Diagnostics.

[10] De-energize the printer.

[11] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY Closure procedure on page 7-28.

[12] Do the ENCASEMENT installation on page 7-10.

[13] Do the DOOR COVER installation on page 7-7.

[14] Energize the PRINTER.

IMPORTANT

To make an ENGINE test print, the S1 SWITCH on the CONTROLLER CIRCUIT BOARD must be in the engine mode. After making the ENGINE test print, de-energize the printer and set the S1 SWITCH on the CONTROLLER BOARD to EXT.

[15] Make an ENGINE test print.

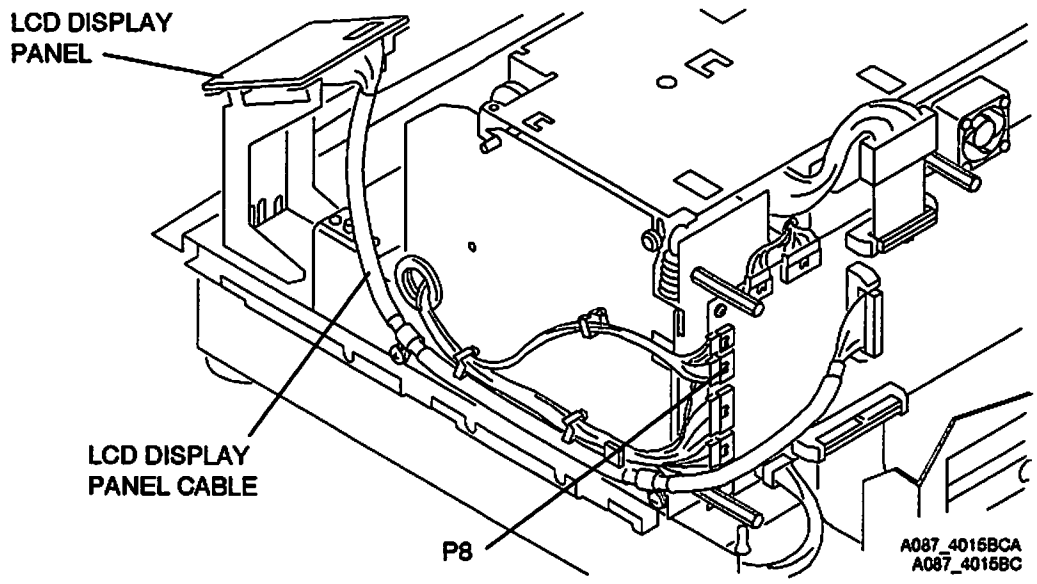

Figure 90

CONTROLLER PRINTED CIRCUIT BOARD Removal

[1] De-energize the PRINTER.

[2] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY access procedure on page 7-25.

[3] Disconnect all CONNECTORS. See the CONTROLLER BOARD illustration on page 7-5.

[4] Remove the 10 SCREWS and 1 STANDOFF SCREW from the CONTROLLER PRINTED CIRCUIT BOARD.

[5] Remove the CONTROLLER PRINTED CIRCUIT BOARD.

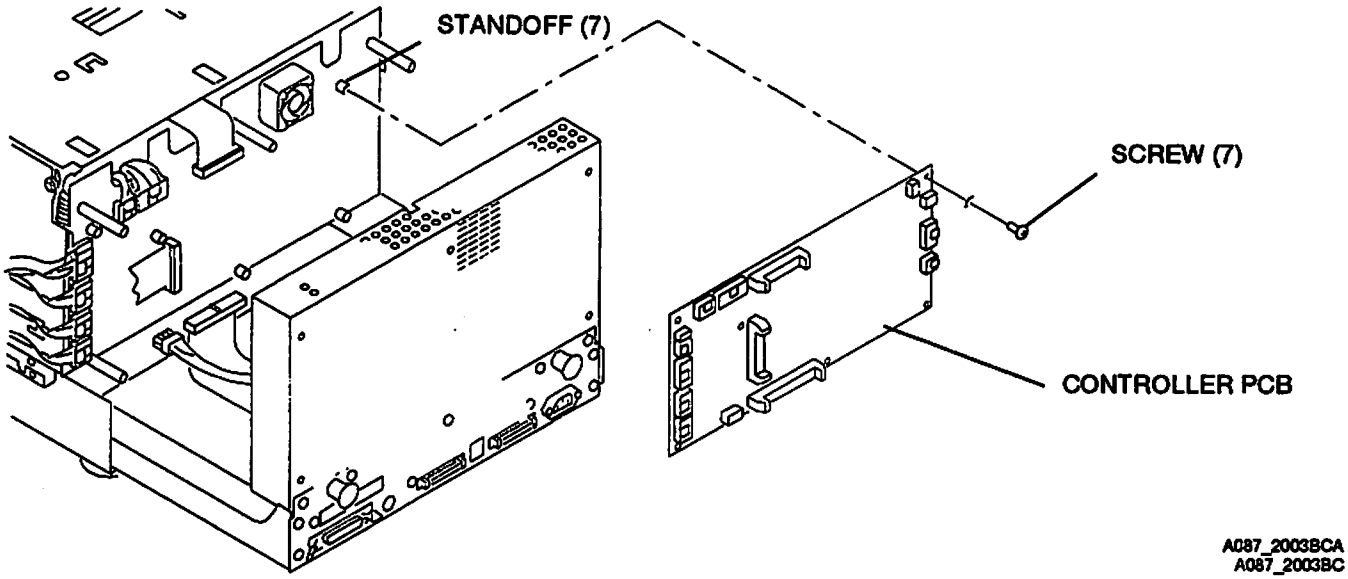

Figure 91 CONTROLLER PRINTED CIRCUIT BOARD

CONTROLLER PRINTED CIRCUIT BOARD Installation

[1] Align the CONTROLLER PRINTED CIRCUIT BOARD with the 7 STANDOFFS.

[2] Install the 10 SCREWS and 1 STANDOFF SCREW to hold the CONTROLLER PRINTED CIRCUIT BOARD to the STANDOFFS.

[3] Install all CONNECTORS.

[4] Do all of the electrical adjustments in the Adjustments Section except for the THERMAL HEAD VOLTAGE adjustment.

IMPORTANT

To make an ENGINE test print, the S1 SWITCH on the CONTROLLER CIRCUIT BOARD must be in the engine mode. After making the ENGINE test print, de-energize the printer and set the S1 SWITCH on the CONTROLLER BOARD to EXT.

[5] Make an ENGINE test print.

[6] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY installation on page 7-28.

[7] Energize the PRINTER.

IMPORTANT

To make an ENGINE test print, the S1 SWITCH on the CONTROLLER CIRCUIT BOARD must be in the engine mode. After making the ENGINE test print, de-energize the printer and set the S1 SWITCH on the CONTROLLER BOARD to EXT.

[8] Make an ENGINE test print.

DONOR SUPPLY BRACKET ASSEMBLY Removal

CAUTION

Do not touch the DONOR; fingerprints can contaminate the DONOR.

[1] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY access procedure on page 7-25.

[2] Energize the printer.

[3] Open the DOOR.

[4] Remove the DONOR ROLLS from the TAKE-UP and SUPPLY ASSEMBLIES.

[5] Access the Diagnostics and select DIAG: HEAD TEST.

[6] Place the THERMAL HEAD in the engage position.

[7] De-energize the printer.

[8] Remove the THERMAL HEAD DATA CONNECTOR from the THERMAL HEAD.

[9] Remove the P5 CONNECTOR from the CONTROLLER PRINTED CIRCUIT BOARD. See the Figure on page 7-5.

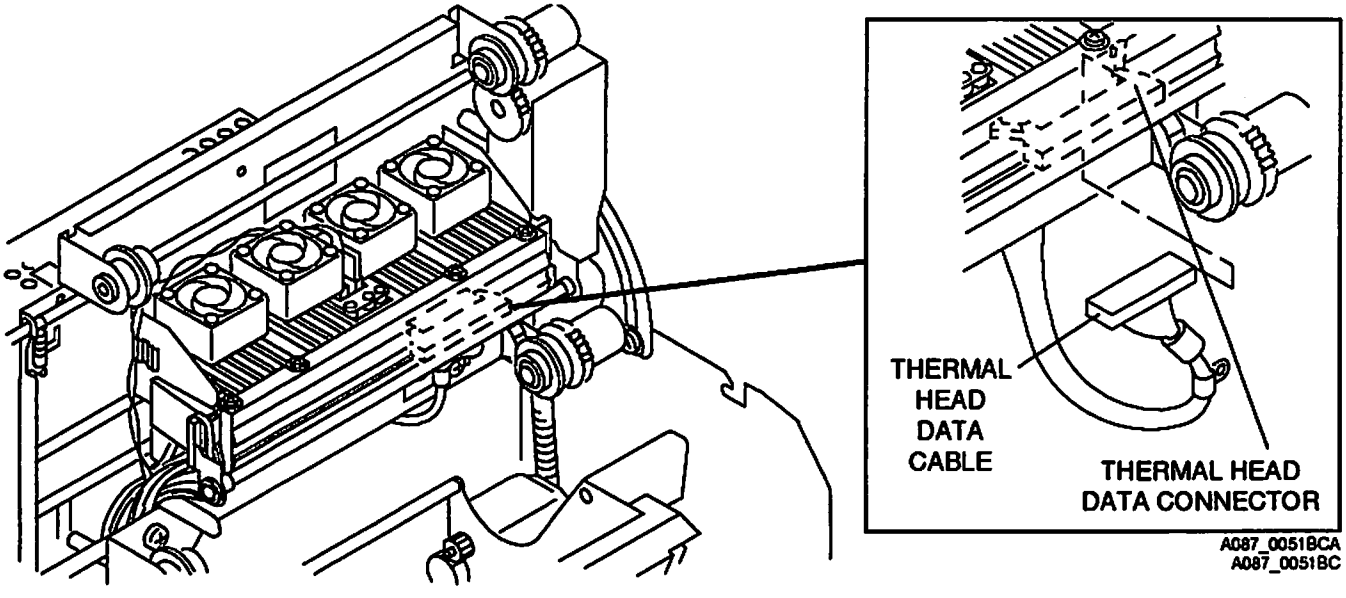

Figure 92 THERMAL HEAD DATA CONNECTOR

[10] Remove the P2 CONNECTOR from the CONTROLLER PRINTED CIRCUIT BOARD. This is a MULTIPLE CONNECTOR; the BAR CODE CONNECTOR is on the right side of P2.

[11] Remove the 4 SCREWS holding the DONOR SUPPLY BRACKET ASSEMBLY.

[12] Observe the positions of the WIRE-HOLDERS and the WIRE PROTECTORS.

[13] Route the P5 CONNECTOR HARNESS through the hole on the BASE ENCLOSURE back wall.

[14] Route the BAR CODE HARNESS through the BASE ENCLOSURE BACK and WALL.

[15] Remove the DONOR SUPPLY BRACKET ASSEMBLY.

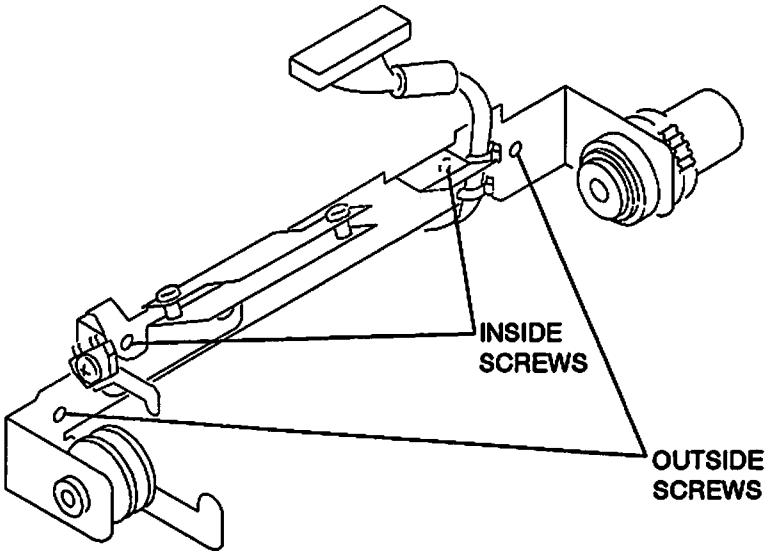

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Figure 93 DONOR SUPPLY BRACKET

DONOR SUPPLY BRACKET ASSEMBLY Installation

IMPORTANT

- Check that the DONOR SUPPLY MOTOR GEAR is aligned with the DONOR SUPPLY CLUTCH GEAR.
- Observe the wire routing and positions before assembling the DONOR SUPPLY BRACKET ASSEMBLY to the DOOR.

[1] Route the P5 CONNECTOR HARNESS through the hole in the BASE ENCLOSURE back wall.

[2] Route the P2 CONNECTOR through the hole in the BASE ENCLOSURE WALL.

[3] Install the *TY-WRAPS* and the WIRE-PROTECTORS.

[4] Align the 4 holes on the DONOR SUPPLY BRACKET with the STANDOFFS on the DOOR ASSEMBLY.

[5] Install the 4 SCREWS on the DONOR SUPPLY BRACKET ASSEMBLY but do not tighten the SCREWS.

[6] Install the THERMAL HEAD DATA CONNECTOR to the THERMAL HEAD.

[7] Tighten the 2 SCREWS in the center of the DONOR SUPPLY BRACKET ASSEMBLY, then the 2 outer SCREWS.

[8] Install the P5 THERMAL HEAD DATA CONNECTOR to the CONTROLLER PRINTED CIRCUIT BOARD and the P2 BAR CODE CONNECTOR into the P2 CONNECTOR.

[9] Do the BAR CODE SENSOR Adjustment on page 8-12.

[10] Do the complete DIAG: DONOR TEST.

IMPORTANT

To make an ENGINE test print, the S1 SWITCH on the CONTROLLER CIRCUIT BOARD must be in the engine mode. After making the ENGINE test print, de-energize the printer and set the S1 SWITCH on the CONTROLLER BOARD to EXT.

[11] Make an ENGINE test print.

[12] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY Closure procedure on page 7-28.

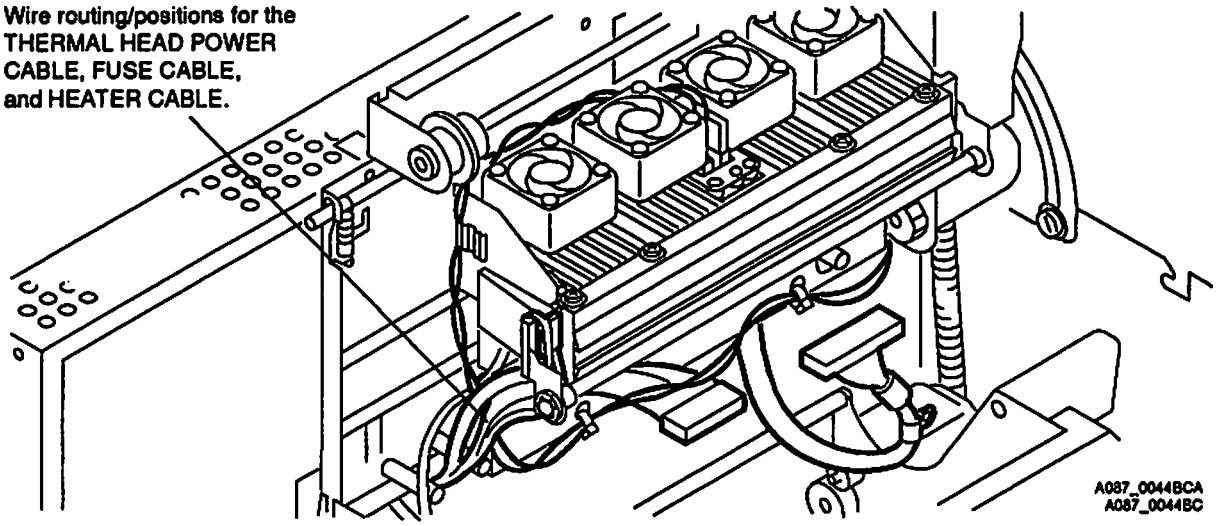

Figure 94

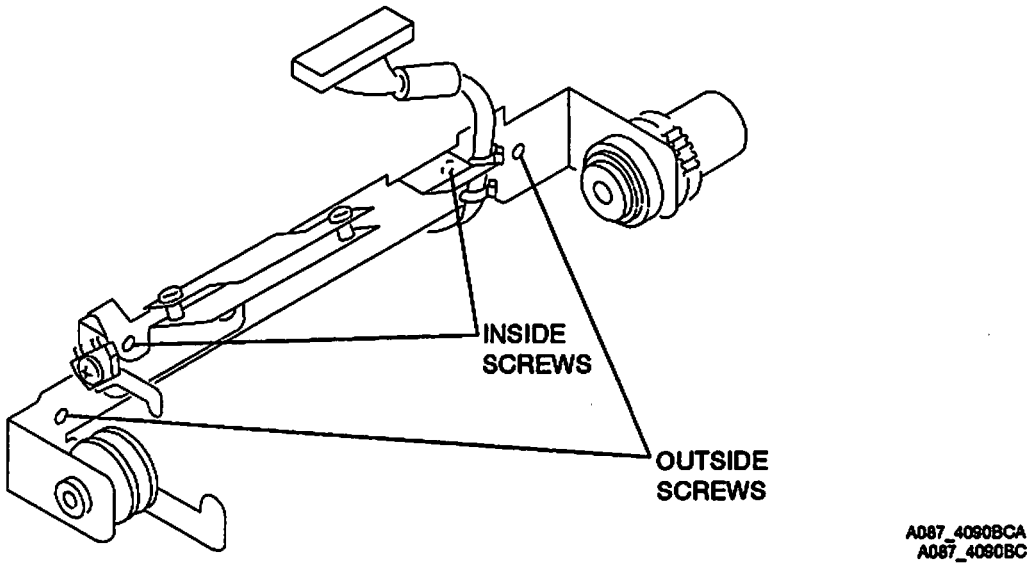

Figure 95

MOTOR BRACKET ASSEMBLY Removal

[1] Open the DOOR.

[2] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY access procedure on page 7-25.

[3] Access the Diagnostics move the THERMAL HEAD into the engage position.

[4] Do the DONOR SUPPLY BRACKET ASSEMBLY removal procedure on page 7-35.

[5] De-energize the printer.

[6] Remove the E-RING on the THERMAL HEAD LIFT CAM BRACKET.

[7] Slide the OIL-LIGHT BUSHING to the right.

[8] Locate and remove the FERRITE BEAD in the upper left corner of the CONTROLLER PRINTED CIRCUIT BOARD.

[9] Remove CONNECTOR P1 from the CONTROLLER PRINTED CIRCUIT BOARD and guide it through the back of the DOOR ASSEMBLY.

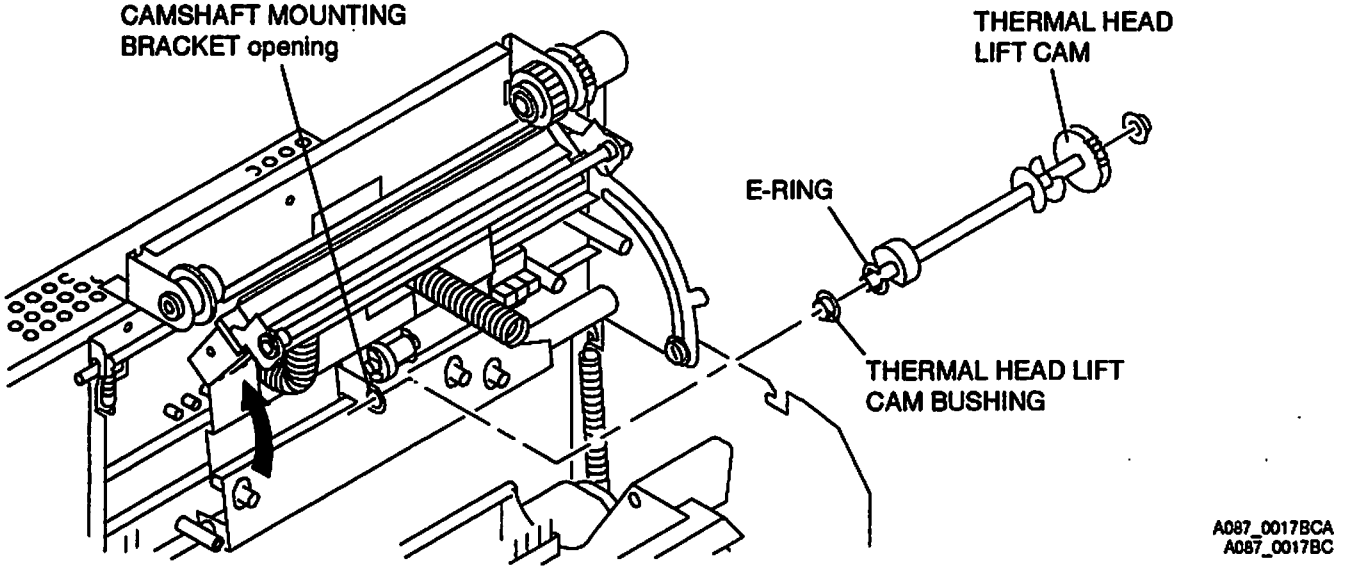

Figure 96

[10] Locate and remove the 3 SCREWS holding the MOTOR BRACKET ASSEMBLY.

IMPORTANT

If the THERMAL HEAD LIFT BUSHING remains in the MOTOR BRACKET ASSEMBLY, remove it and install it on the THERMAL HEAD LIFT SHAFT.

[11] Remove the MOTOR BRACKET ASSEMBLY.

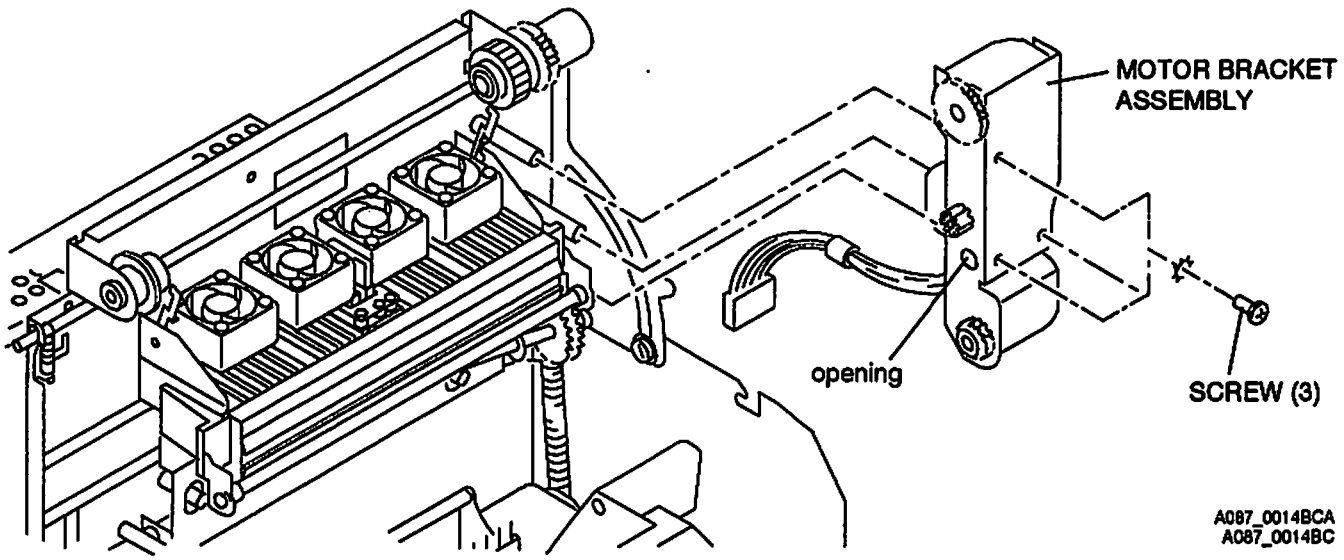

Figure 97

MOTOR BRACKET ASSEMBLY Installation

CAUTION

Do not close the DOOR until the THERMAL HEAD is in the retract position.

[1] Locate the opening on the GEAR (left) side of the MOTOR BRACKET ASSEMBLY.

[2] Slide the THERMAL HEAD LIFT SHAFT/BUSHING into the hole on the GEAR (left) side of the MOTOR BRACKET ASSEMBLY.

[3] Slide the THERMAL HEAD LIFT CAM SHAFT and BUSHING into the opening of the CAM SHAFT MOUNTING BRACKET.

[4] Align the 3 SCREW holes on the MOTOR BRACKET ASSEMBLY with the 3 STANDOFFS on the DOOR ASSEMBLY.

[5] Check that the MOTOR BRACKET ASSEMBLY is correctly seated on the 3 STANDOFFS.

[6] Check that the TAKE-UP MOTOR GEAR and CLUTCH are aligned.

[7] Install the E-RING on the THERMAL HEAD LIFT CAM SHAFT.

[8] Install the 3 SCREWS on the MOTOR BRACKET ASSEMBLY.

[9] Route the P1 CONNECTOR HARNESS through the hole on the BASE ENCLOSURE WALL.

[10] Connect the P1 CONNECTOR.

[11] Install the FERRITE BEAD.

[12] Do the DONOR SUPPLY BRACKET ASSEMBLY installation procedure on page 7-37.

[13] Do the following diagnostic tests: HEAD TEST, DONOR TEST, and PICK/EJECT.

[14] Do the DOOR COVER installation procedure on page 7-7.

[15] Do the ENCASEMENT installation procedure on page 7-10.

IMPORTANT

To make an ENGINE test print, the S1 SWITCH on the CONTROLLER CIRCUIT BOARD must be in the engine mode. After making the ENGINE test print, de-energize the printer and set the S1 SWITCH on the CONTROLLER BOARD to EXT.

[16] Make an ENGINE test print.

[17] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY closure procedure on page 7-28.

FAN BRACKET ASSEMBLY Removal

[1] Disconnect P1 (12 V DC supply) from the DONOR CIRCUIT BOARD SENSOR ASSEMBLY.

[2] Remove the P1 HARNESS from the side of the FAN BRACKET ASSEMBLY.

[3] Use a 5/16 in. NUT DRIVER to loosen the 2 outside NUTS and remove the 2 inside NUTS holding the FAN BRACKET ASSEMBLY to the DOOR.

IMPORTANT

It may be necessary to move the THERMAL HEAD toward the front of the printer before you remove the FAN BRACKET ASSEMBLY.

[4] To remove the FAN BRACKET ASSEMBLY, pull the FAN BRACKET ASSEMBLY toward the front of the printer and slide it up and out.

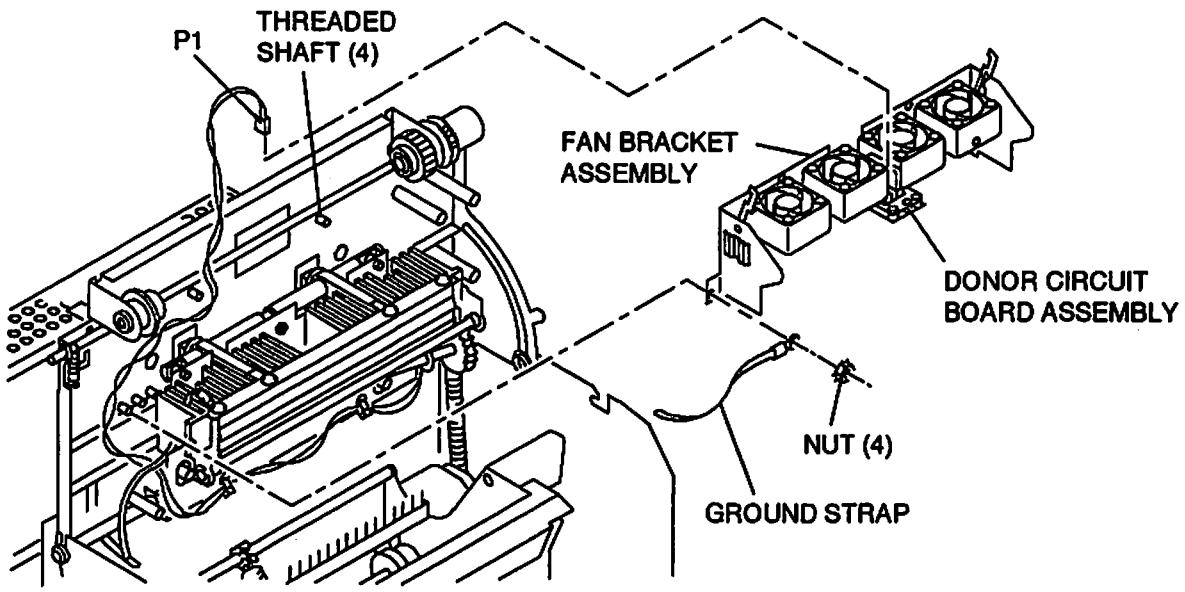

Figure 98

FAN BRACKET ASSEMBLY Installation

[1] Move the THERMAL HEAD down.

[2] Install the FAN BRACKET ASSEMBLY by sliding the FAN BRACKET over the 4 THREADED SHAFTS.

CAUTION

Do not pinch the P1 HARNESS.

[3] Install and tighten the 2 center NUTS on the FAN BRACKET ASSEMBLY.

[4] Tighten the 2 outside NUTS on the FAN BRACKET ASSEMBLY.

[5] Install the P1 HARNESS on the side of the FAN BRACKET ASSEMBLY.

[6] Install the 4 NUTS on the FAN BRACKET ASSEMBLY.

[7] Connect P1 to the DONOR CIRCUIT BOARD SENSOR ASSEMBLY.

[8] Do the DONOR adjustment on page 8-10.

[9] Do the following diagnostic tests: HEAD TEMP and DONOR TEST.

[10] Make a test print.

Revised THERMAL HEAD and HEAT SINK ASSEMBLY Removal

CAUTION

Possible damage from electrostatic discharge.

CAUTION

The THERMAL HEAD must be in the engage position during this removal and installation.

IMPORTANT

- Use the THERMAL HEAD Cleaning Procedure on page 2-2; this same procedure is packed with every THERMAL HEAD.
- Check that the THERMAL HEAD is the cause of the artifact before you install a new THERMAL HEAD. The artifact might be caused by DONOR and/or RECEIVER or other system components.

[1] Open the DOOR.

CAUTION

Do not touch the DONOR; fingerprints can contaminate the DONOR.

[2] Remove the DONOR and PAPER TRAY.

[3] Remove the 5 SCREWS from the CONTROLLER ENCLOSURE DRAWER ASSEMBLY.

[4] Slide the DRAWER out approximately 15.24 cm (6 in.).

IMPORTANT

It is not necessary to remove the DOOR COVER or ENCASEMENT to to this procedure.

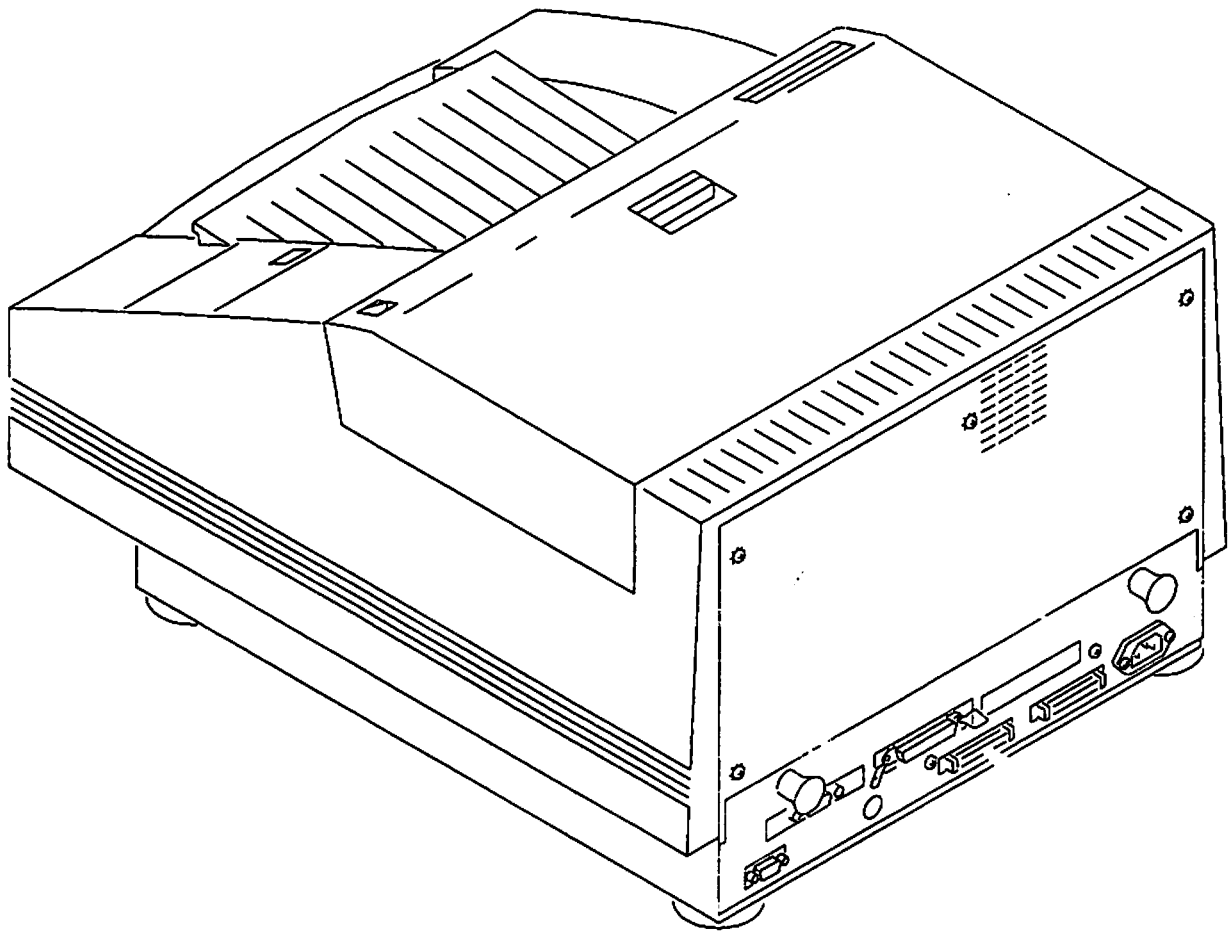

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Figure 99 DRAWER ASSEMBLY

[5] Place the THERMAL HEAD in the engage position.

(a) Energize the printer and observe the THERMAL HEAD movement. The THERMAL HEAD should move from the retract position (the normal position of the THERMAL HEAD in the Ready mode) to the engage position (the normal position of the THERMAL HEAD in the Print mode. The engage position is the furthest position of the THERMAL HEAD from the DOOR ASSEMBLY.

(b) As the THERMAL HEAD reaches the engage position, de-energize the printer. Do this procedure again to check that the THERMAL HEAD is in the engage position.

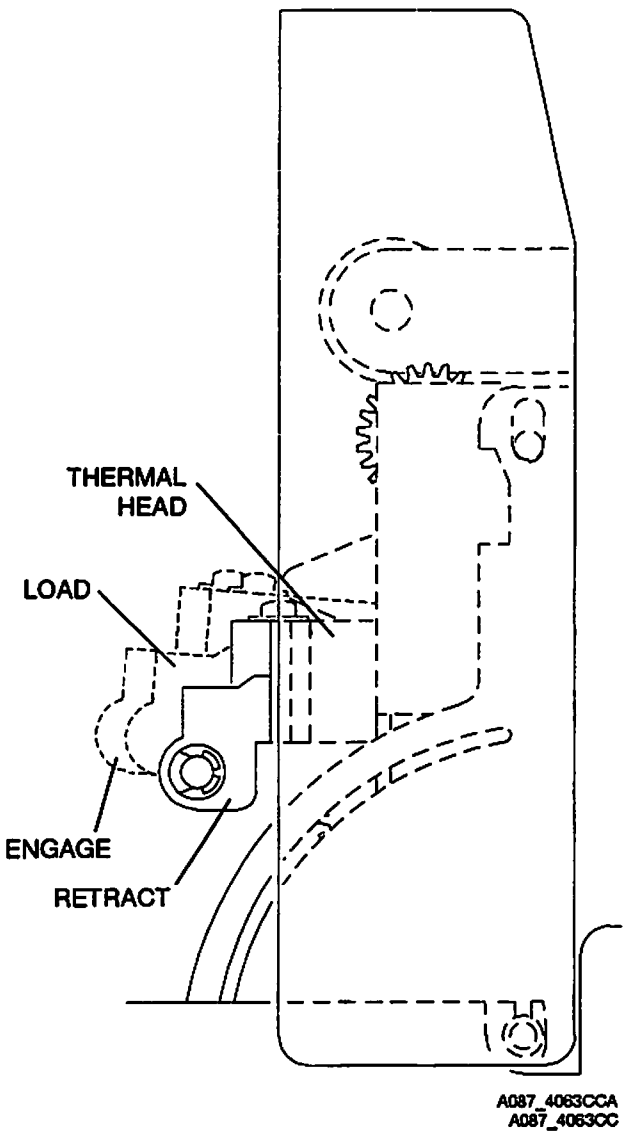

Figure 100 THERMAL HEAD Positions

[6] Locate and remove CONNECTOR P4 from the CONTROLLER PRINTED CIRCUIT BOARD. See the Chart on page 7-5.

[7] Locate the FERRITE BEAD on the upper right corner of the CONTROLLER PRINTED CIRCUIT BOARD.

[8] Use a flat-blade, small SCREWDRIVER to remove the FERRITE BEAD.

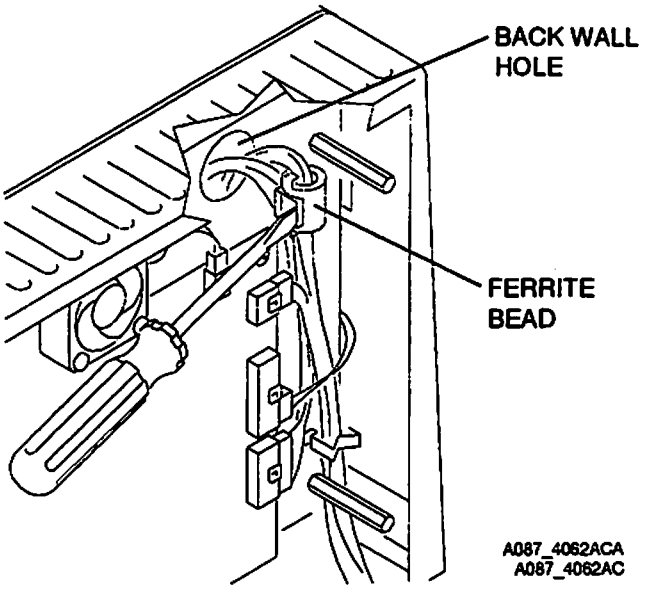

Figure 101 FERRITE BEAD

[9] Remove the THERMAL HEAD DATA CABLE.

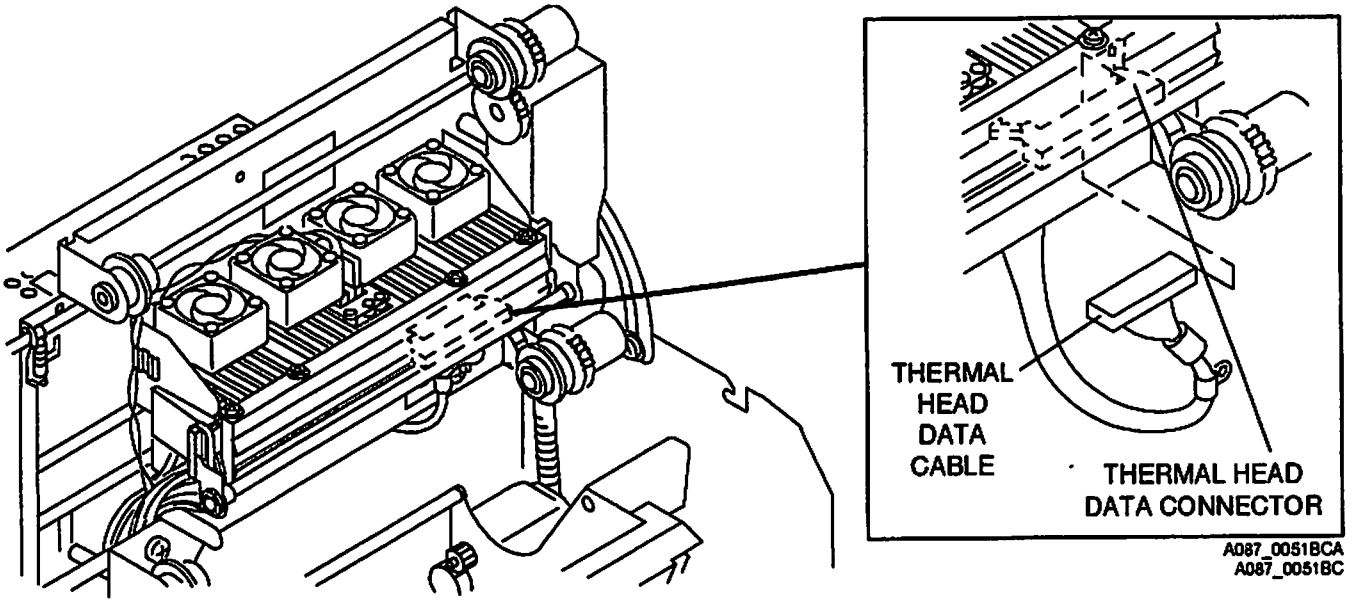

Figure 102 FERRITE BEAD

IMPORTANT

Do not cause damage to the DONOR SENSOR or the GEARS.

[10] Remove the 4 SCREWS from the DONOR SUPPLY BRACKET.

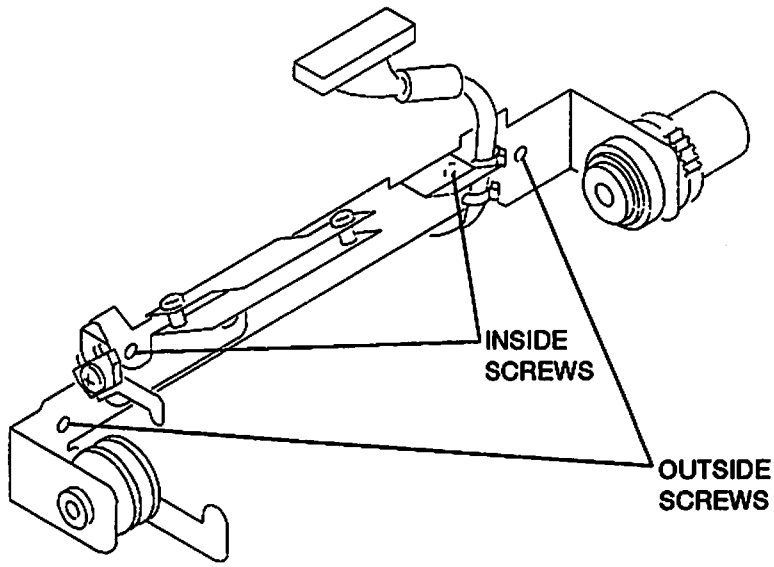

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Figure 103 DONOR SUPPLY BRACKET

CAUTION

Do not damage the GEARS or the BAR CODE SENSOR on the DONOR SUPPLY BRACKET.

[11] Place the DONOR SUPPLY BRACKET as shown.

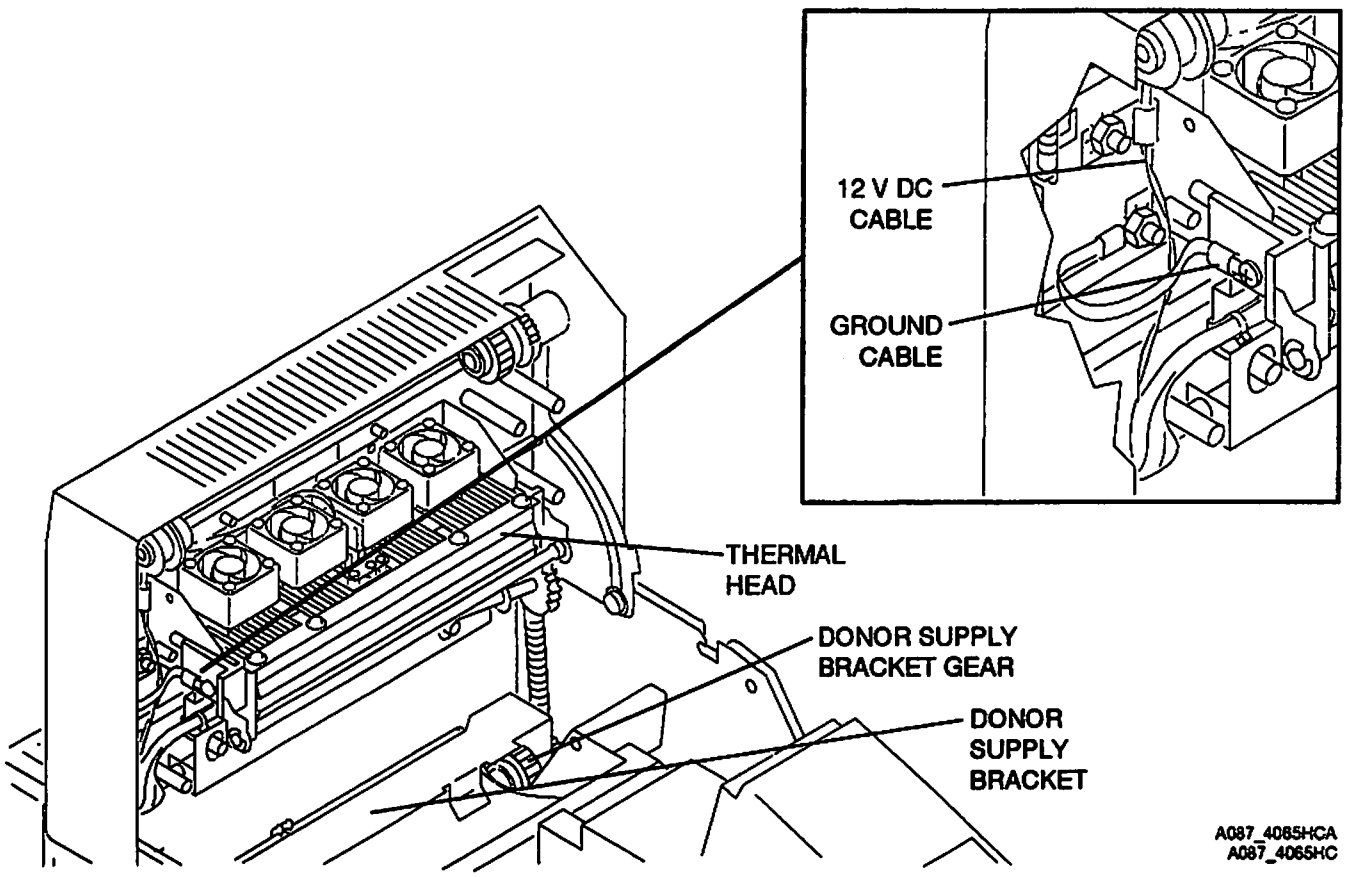

Figure 104 DONOR SUPPLY BRACKET Location

[12] Remove the THERMAL HEAD POWER CABLE.

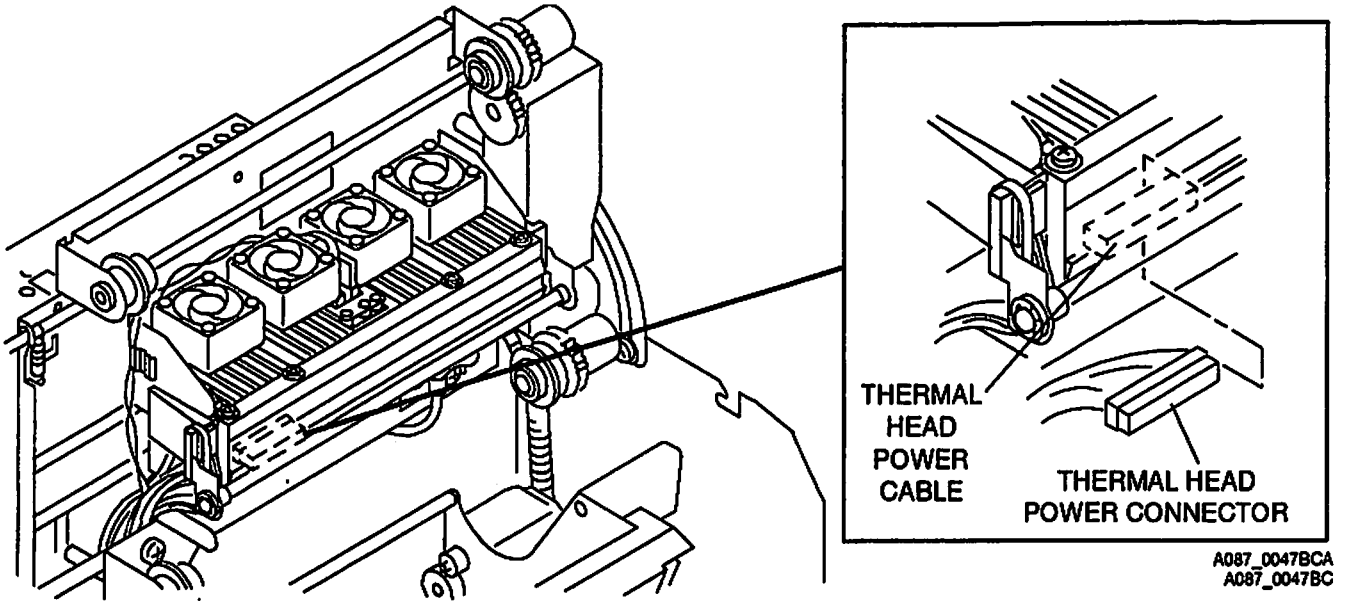

Figure 105 THERMAL HEAD POWER CABLE

[13] Remove the 2 *Phillips* HEAD SCREWS holding the GROUND CABLE to the left side of the THERMAL HEAD.

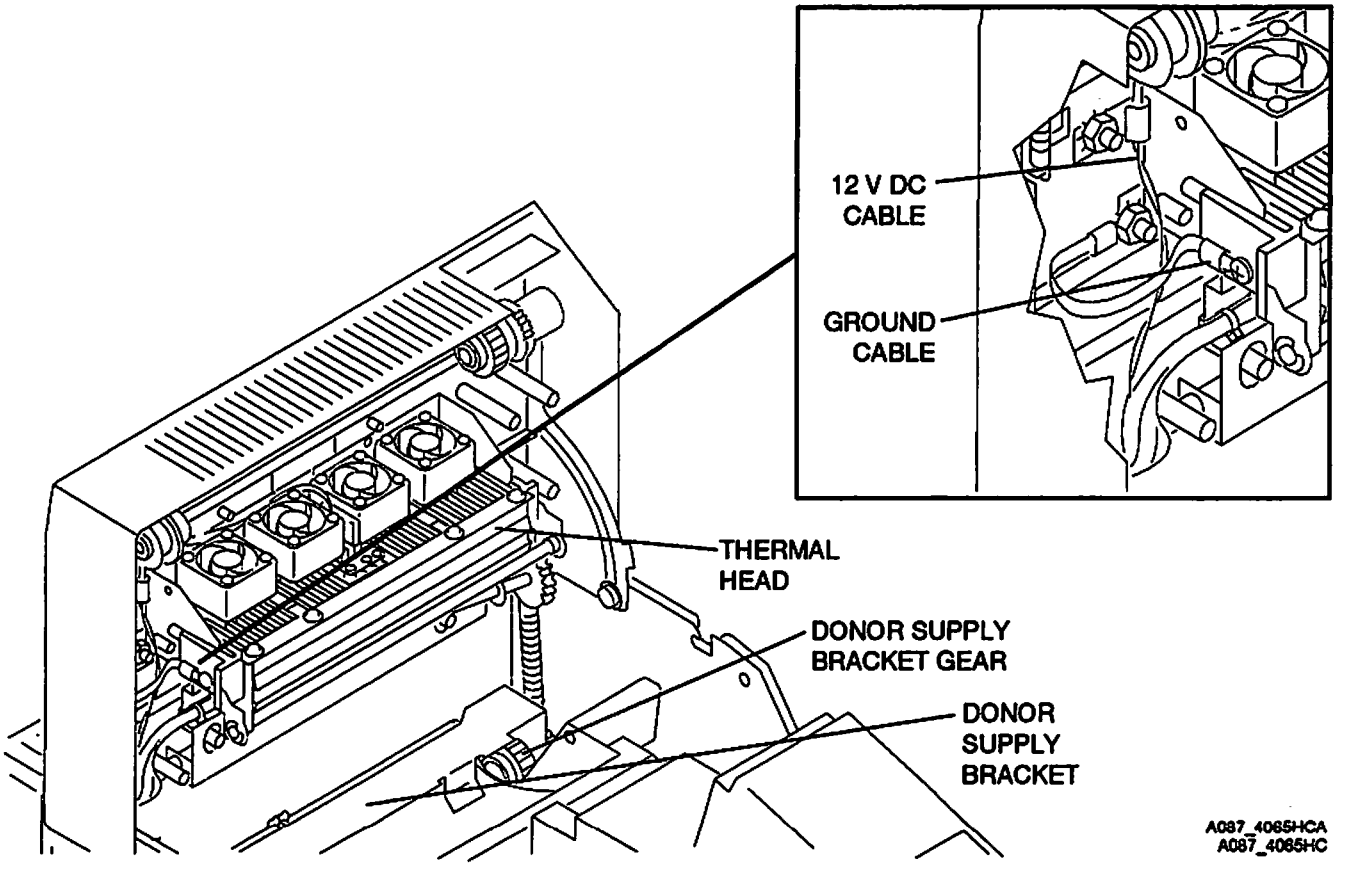

Figure 106 THERMAL HEAD GROUND CABLE

[14] Remove the *TY-WRAPS* from the left side of the THERMAL HEAD LIFT PLATE.

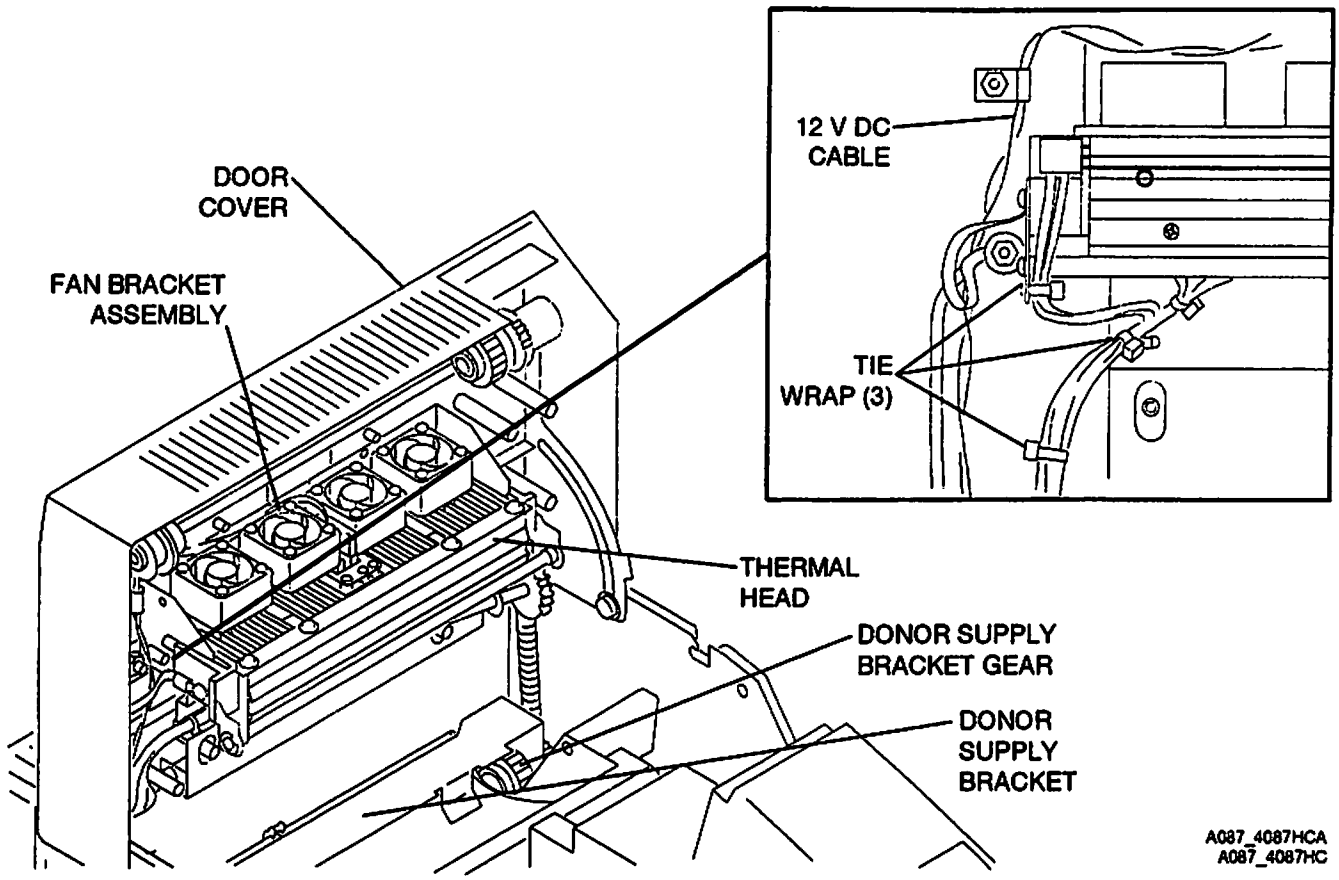

Figure 107 THERMAL HEAD POWER CABLE

[15] Route the P4 CONNECTOR and HARNESS (white, black, and red wires) through the hole in the back wall. See the Figure 101.

[16] Remove the 12 V DC POWER CONNECTOR from the FAN BRACKET ASSEMBLY and move the CONNECTOR to the left.

[17] Use a 5/16 in. NUT DRIVE to loosen the 2 NUTS on the left and right side of the FAN BRACKET.

[18] Remove the 2 5/16 in. NUTS in the center of the FAN BRACKET.

[19] Slide the FAN BRACKET up and away from the DOOR and remove.

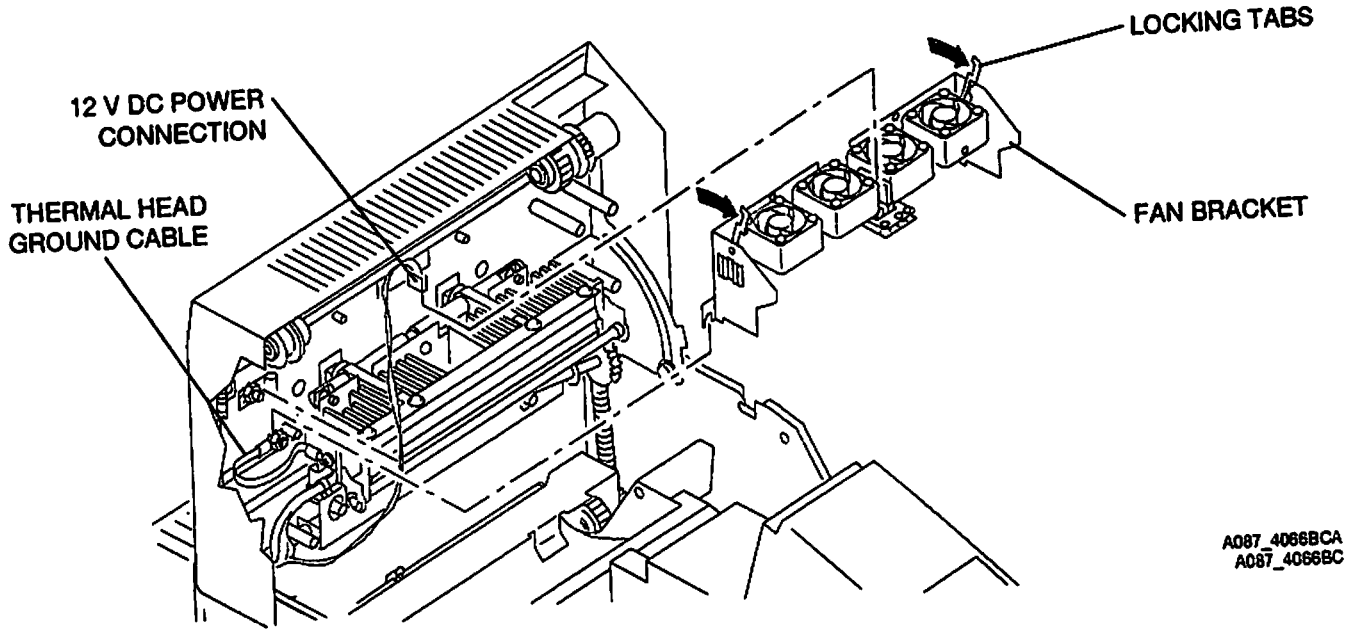

Figure 108 THERMAL HEAD POWER CABLE

CAUTION

Handle the THERMAL HEAD carefully and with caution. The THERMAL HEAD BEAD and HEAT LINE can be easily damaged.

[20] Remove the THERMAL HEAD by moving the THERMAL HEAD back and sliding it up.

[21] Check the exposed DOOR AREA for contaminants and clean if necessary.

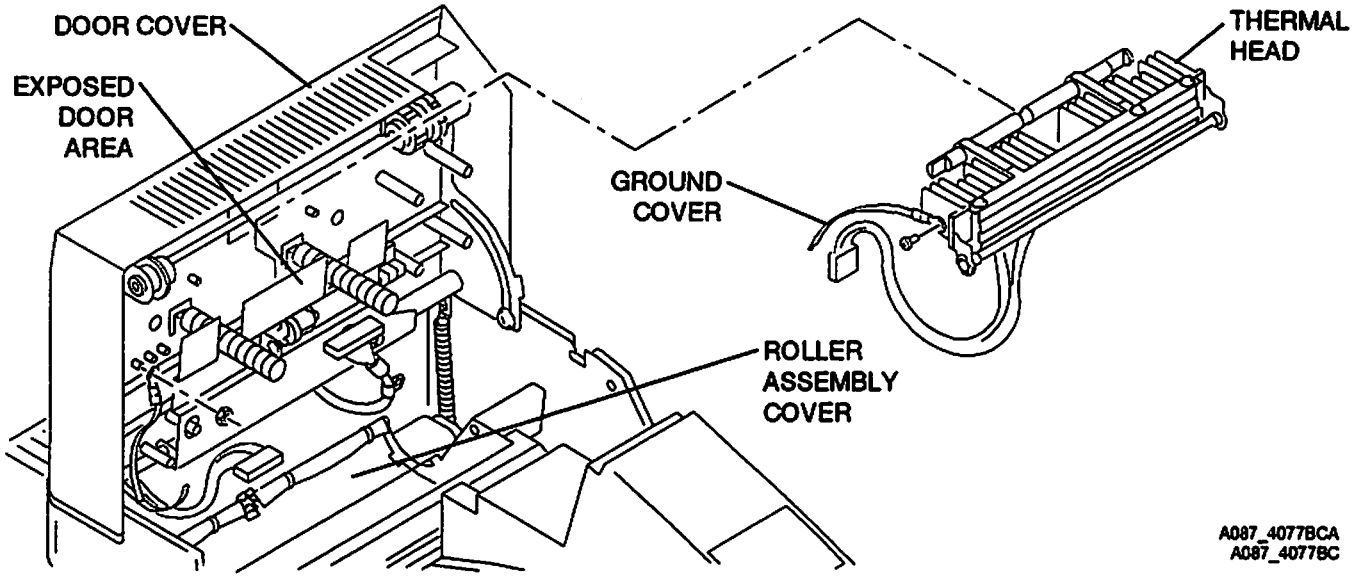

Figure 109 THERMAL HEAD

THERMAL HEAD and HEAT SINK ASSEMBLY Installation

CAUTION

Handle the THERMAL HEAD carefully and with caution. The THERMAL HEAD BEAD/HEAT LINE can be easily damaged.

[1] Locate the SLOT on the DOOR HEAD LIFT PLATE.

[2] Align the DOOR THERMAL HEAD LIFT SHAFT located on the THERMAL HEAD HEAT SINK.

[3] Push the BUSHING to the SLOT in the DOOR HEAD LIFT SHAFT.

[4] With the DOOR in the UP position and the THERMAL HEAD at a ≈ 40° angle from the DOOR, slide the SHAFT in the notch of the THERMAL HEAD.

[5] Install the 2 SPRINGS on the THERMAL HEAD HEAT SINK.

IMPORTANT

Check that the FLAT HEAD SCREWS are against the THERMAL HEAD HEAT SINK SHAFT.

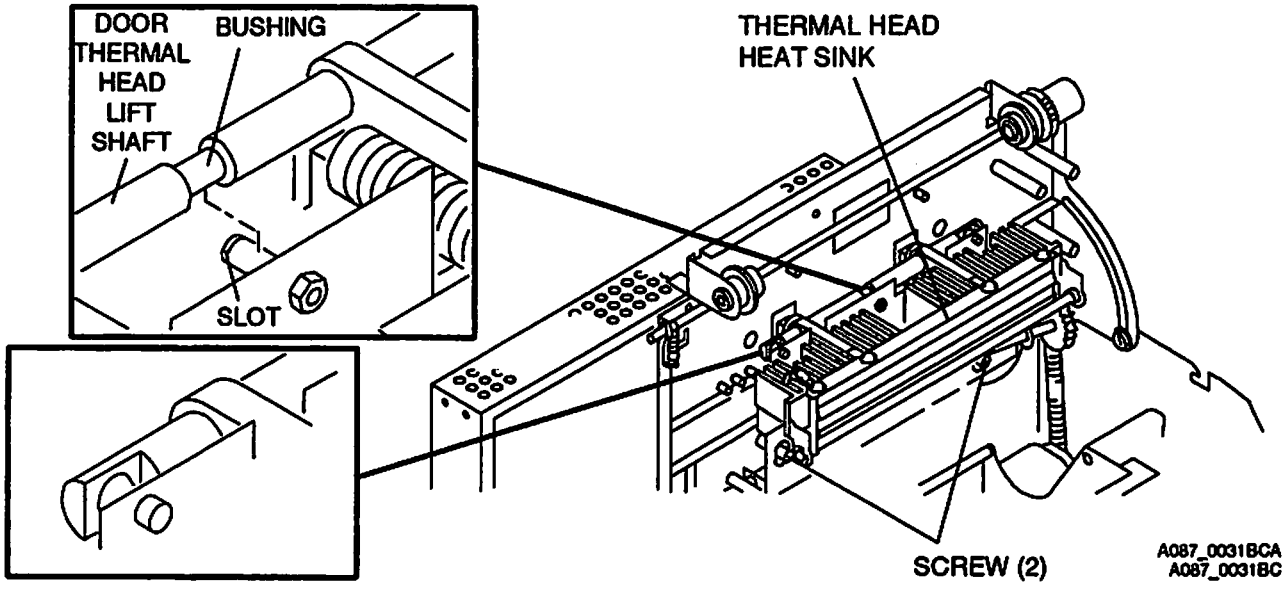

Figure 110 THERMAL HEAD HEAT SINK

[6] Install the FAN BRACKET ASSEMBLY by sliding down and in toward the DOOR.

[7] Pull the LOCKING TABS away from the DOOR to seat the FAN BRACKET ASSEMBLY over the 4 THREADED SHAFTS and 2 LOCATOR PINS on the DOOR ASSEMBLY.

[8] Check that the FAN BRACKET is in the correct position by checking that on the FAN BRACKET on the left side is under the NUT and GROUND STRAP. Check that the FAN BRACKET on the right side is under the NUT.

[9] Check that the LOCATOR PINS are also in the holes on the FAN BRACKET.

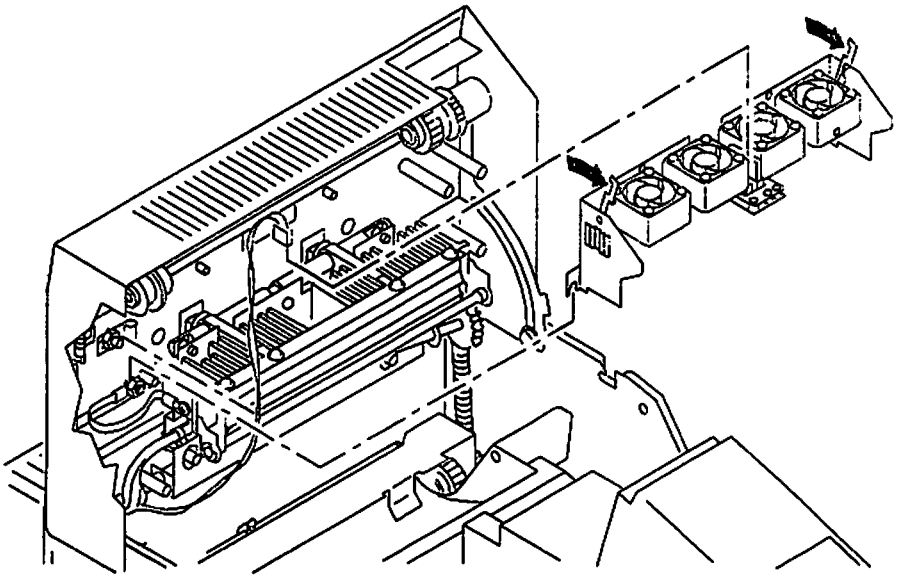

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Figure 111 FAN BRACKET ASSEMBLY Installation

[10] Install and tighten the 2 inside SCREWS then the 2 outside SCREWS.

[11] Route and install the 12 V DC CONNECTOR for the FAN BRACKET CABLE and CONNECTOR.

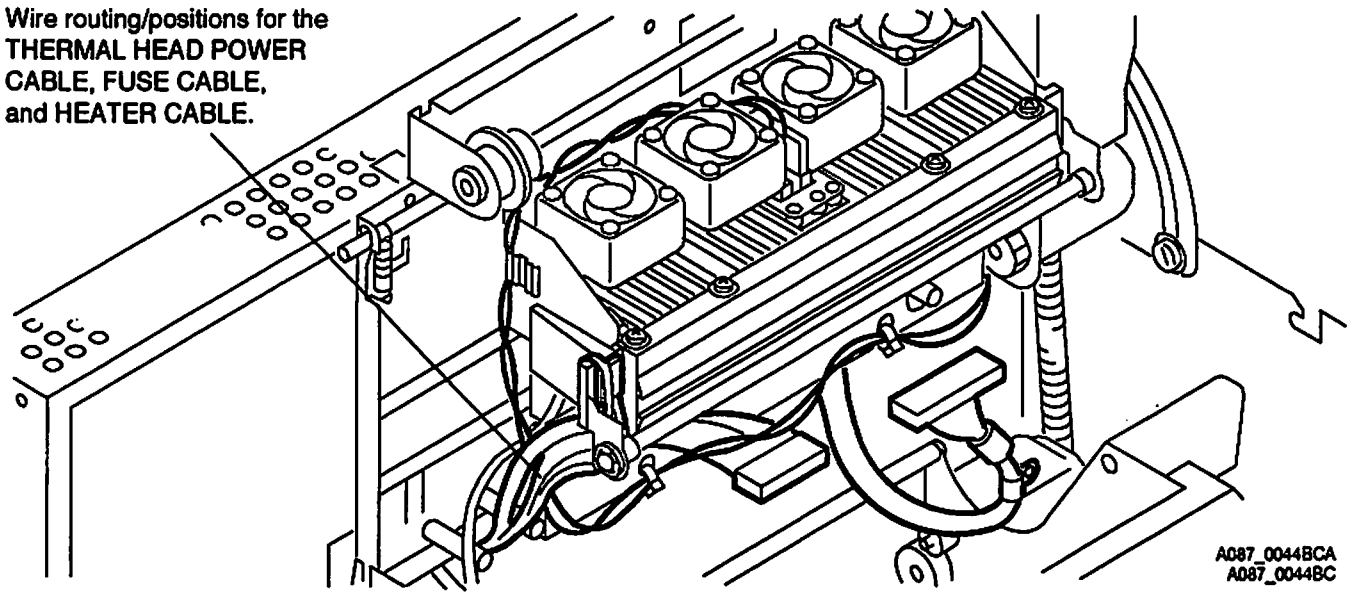

Figure 112 12 V DC CONNECTOR

[12] Install the GROUND STRAP on the left side of the THERMAL HEAD.

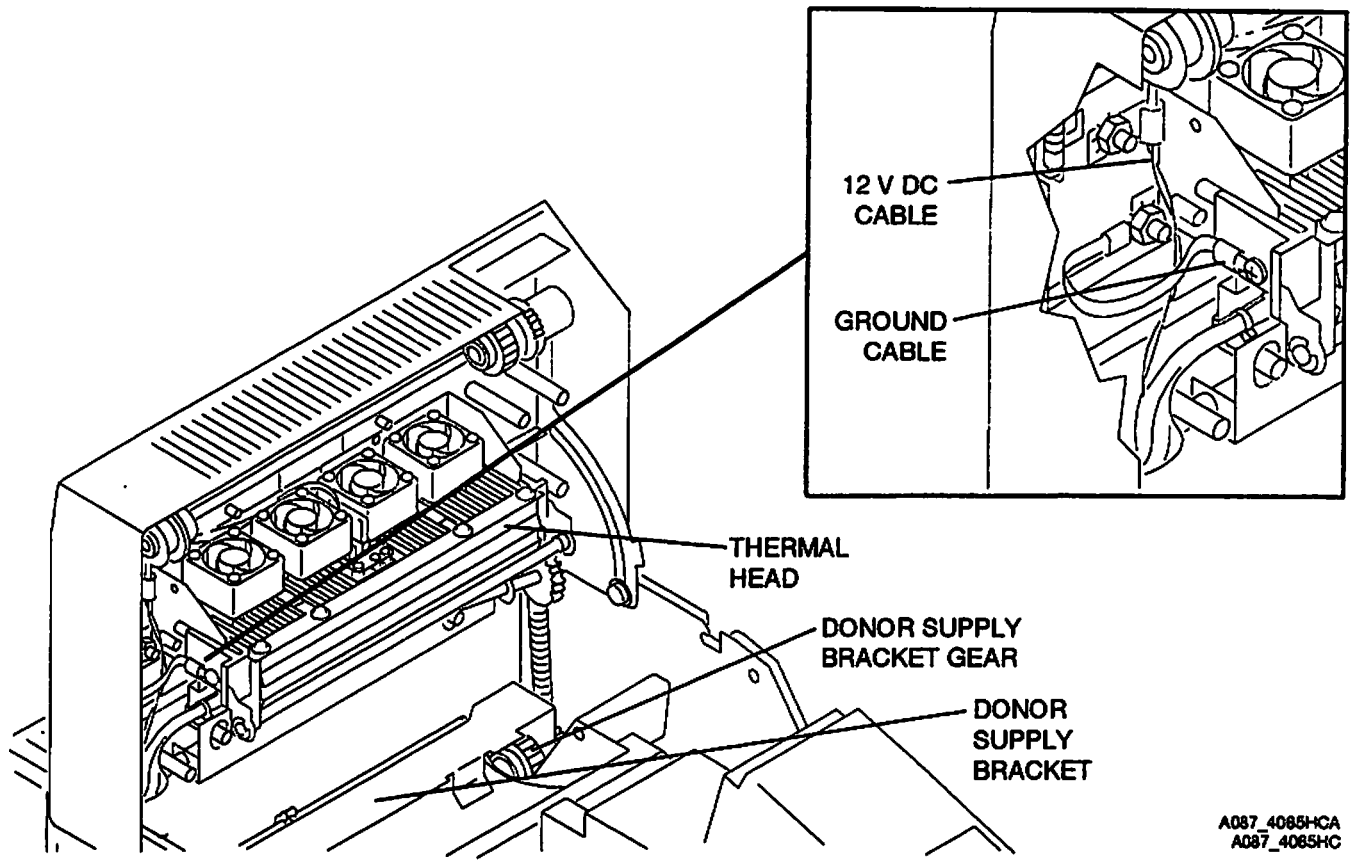

Figure 113 GROUND STRAP

[13] Install the THERMAL HEAD POWER CONNECTOR.

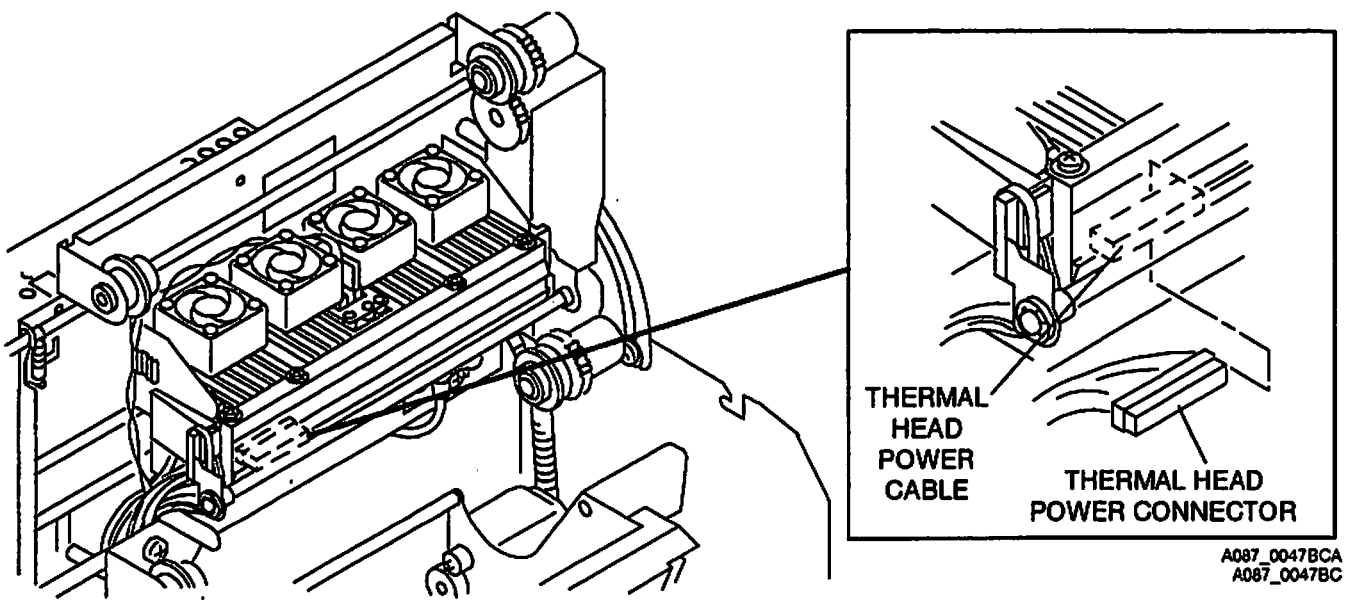

Figure 114 THERMAL HEAD POWER CONNECTOR

[14] Route the P4 HARNESS from the THERMAL HEAD (white, black, and red wires) through the hole in the back wall.

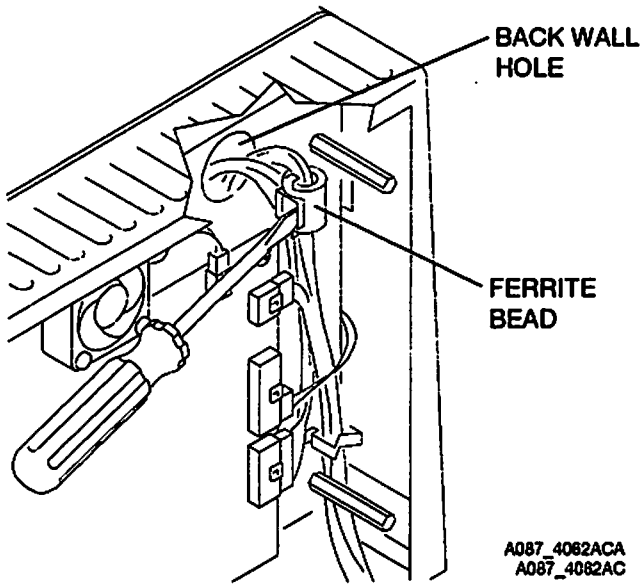

Figure 115 THERMAL HEAD POWER CONNECTOR

[15] Install the P4 CONNECTOR to the CONTROLLER PRINTED CIRCUIT BOARD. See the Chart on page 9-4.

[16] Use a *TY-WRAP* to connect the P4 wires and THERMAL HEAD power wires to the THERMAL HEAD LIFT PLATE.

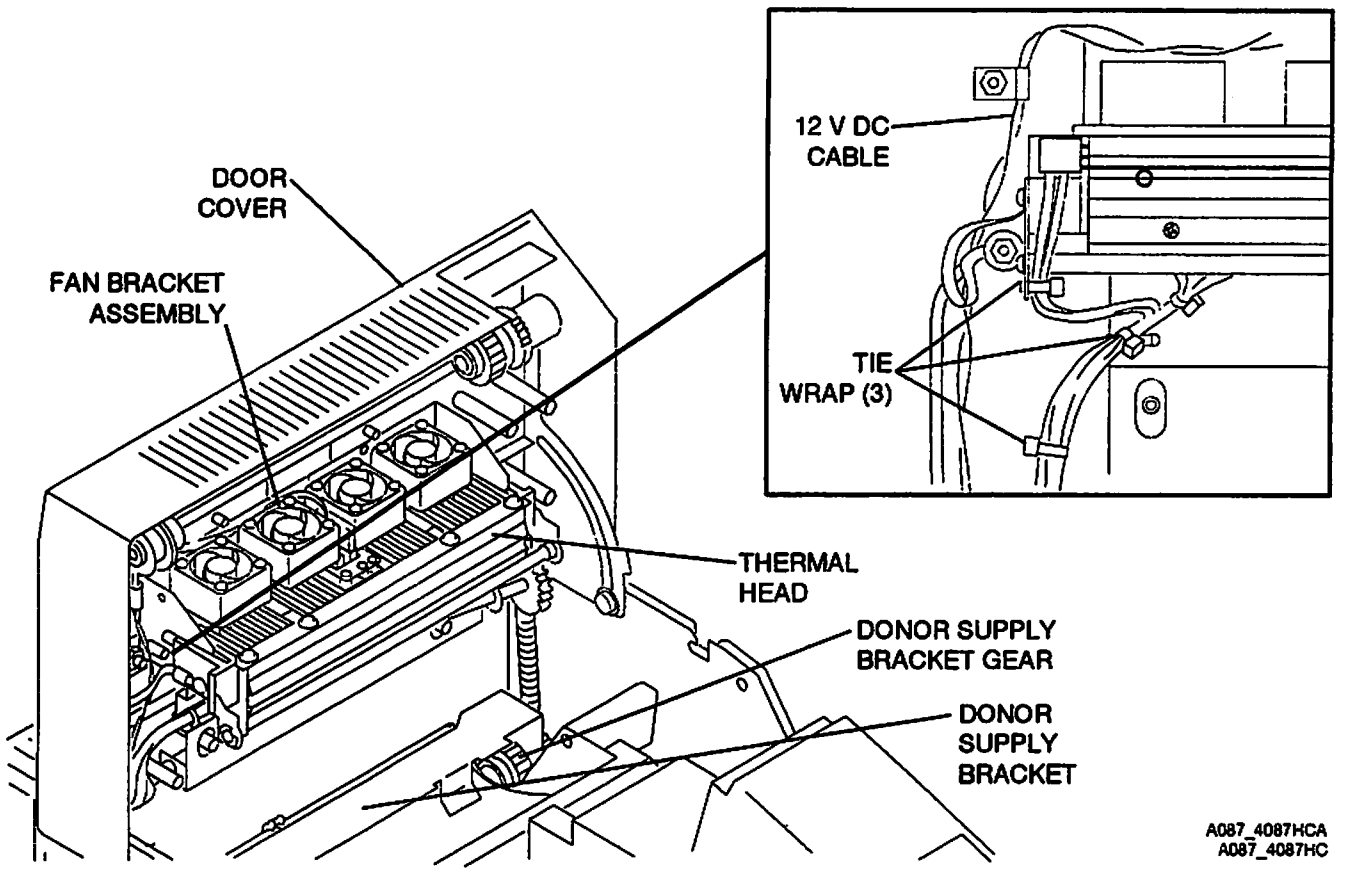

Figure 116 THERMAL HEAD POWER CONNECTOR

[17] Install the DONOR SUPPLY BRACKET but do not tighten the 4 SCREWS.

IMPORTANT

Check for pinched wires under the left side of the DONOR SUPPLY BRACKET.

[18] Install the THERMAL HEAD DATA CABLE.

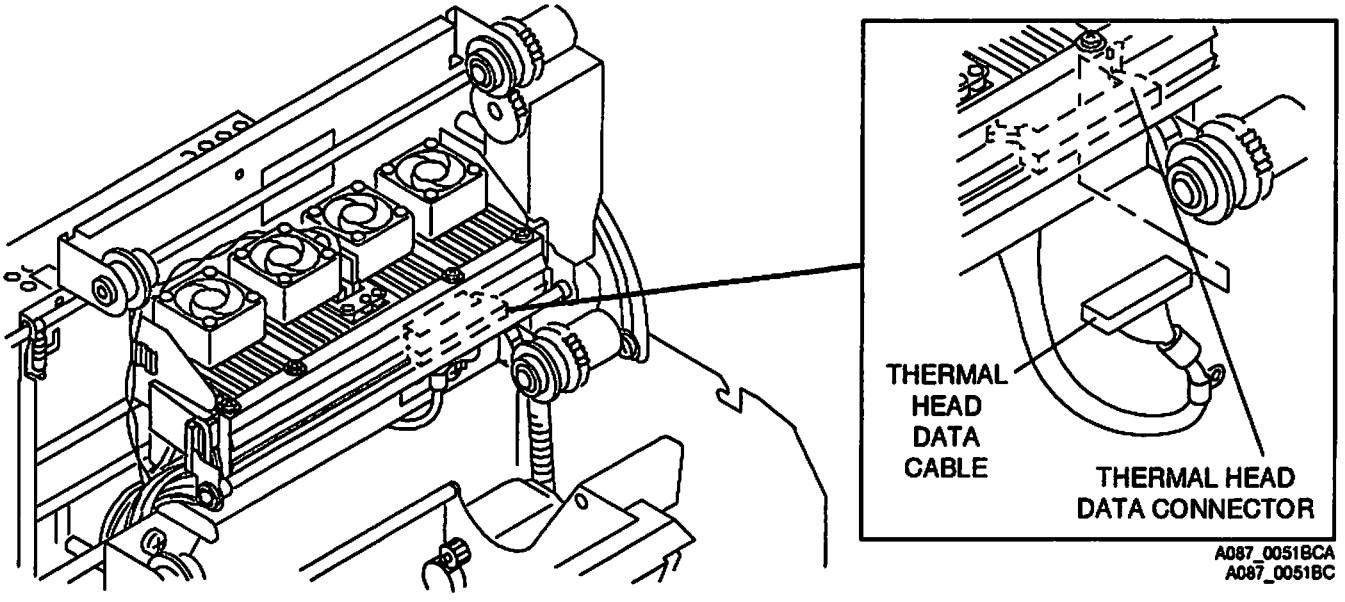

Figure 117 THERMAL HEAD DATA CABLE

[19] Tighten the 2 inside SCREWS on the DONOR SUPPLY BRACKET, then the 2 outside SCREWS.

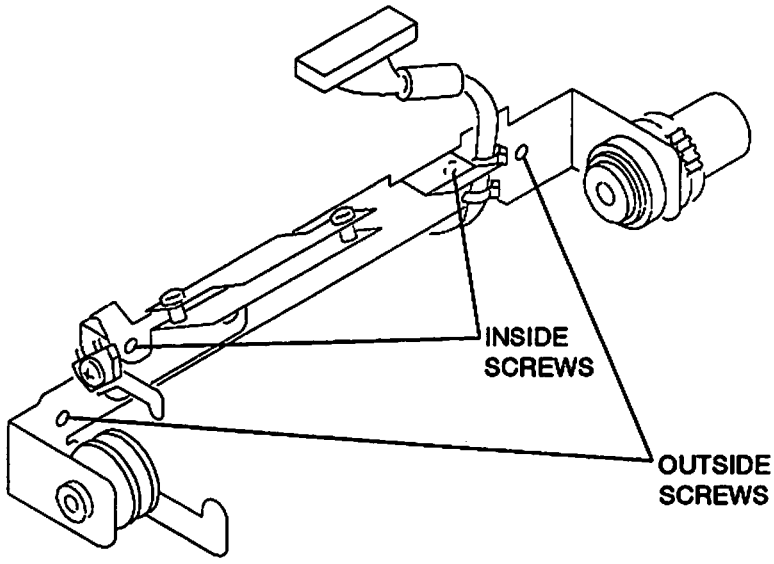

Figure 118 DONOR SUPPLY BRACKET

[20] Do the THERMAL HEAD Cleaning procedure on page 2-2.

[21] Check the ROLLER ASSEMBLY COVER for debris and use alcohol and a soft cloth to clean if necessary.

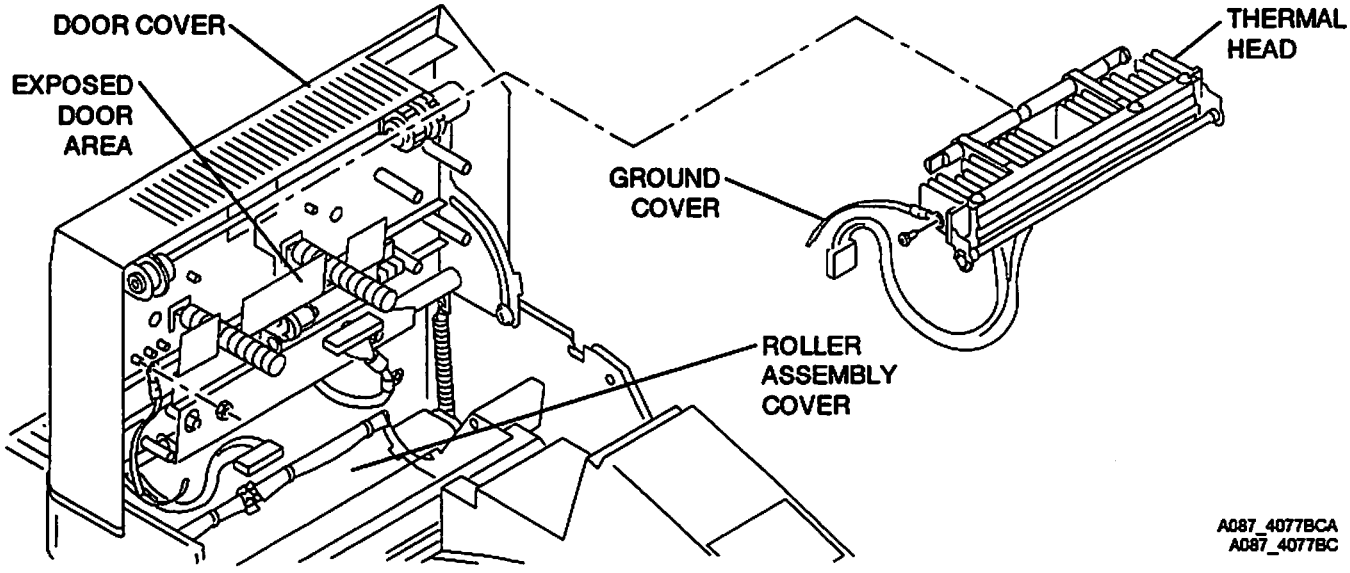

Figure 119

[22] Energize the printer.

[23] Do the THERMAL HEAD Voltage Adjustment procedure on page 8-7.

CAUTION

Do not touch the DONOR; fingerprints can contaminate the DONOR.

[24] Install the DONOR and PAPER TRAY.

IMPORTANT

To make an ENGINE test print, the S1 SWITCH on the CONTROLLER CIRCUIT BOARD must be in the engine mode. After making the ENGINE test print, de-energize the printer and set the S1 SWITCH on the CONTROLLER BOARD to EXT.

[25] Make an ENGINE test print.

[26] Check for light printing or DONOR jams. This might be caused by the THERMAL HEAD DATA CABLE pushing against the DONOR SUPPLY SPOOL or the CABLES on the left side of the THERMAL HEAD stopping the THERMAL HEAD movement.

[27] De-energize the printer.

[28] Move the ENGINE/EXTERNAL SWITCH on the CONTROLLER PRINTED CIRCUIT BOARD to the external mode.

[29] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY Closure procedure on page 7-28.

[30] Connect the printer to the system.

[31] Energize the system.

[32] Make a test print to check for correct operation.

THERMAL HEAD LIFT SHAFT ASSEMBLY Removal

[1] Energize the printer.

[2] Access the Diagnostics and place the THERMAL HEAD in the engage position.

[3] De-energize the printer.

[4] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY access procedure on page 7-25.

[5] Do the DONOR SUPPLY BRACKET removal procedure on page 7-35.

[6] Do the MOTOR BRACKET ASSEMBLY removal procedure on page 7-39.

[7] Remove the THERMAL HEAD LIFT SHAFT ASSEMBLY.

IMPORTANT

If the THERMAL HEAD LIFT SHAFT BUSHING is on the THERMAL HEAD LIFT SHAFT, remove it and insert it in the THERMAL HEAD LIFT SUPPORT PIVOT.

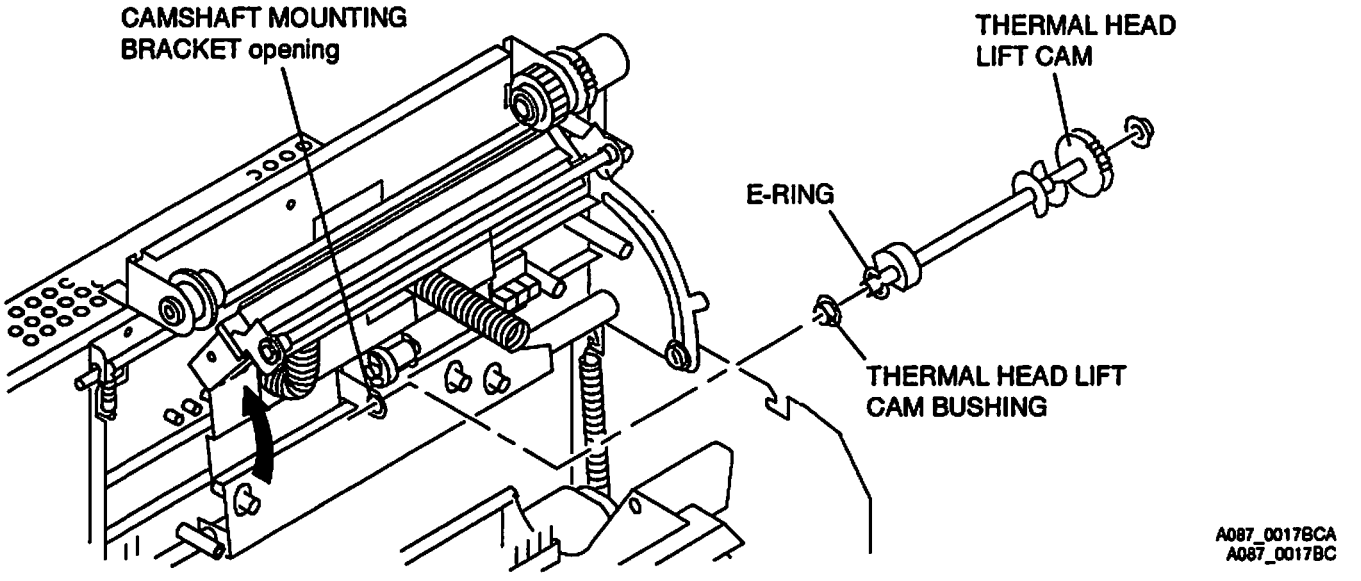

Figure 120

THERMAL HEAD LIFT SHAFT ASSEMBLY Installation

[1] Insert the THERMAL HEAD LIFT SHAFT ASSEMBLY into the THERMAL HEAD LIFT BUSHING.

[2] Do the THERMAL HEAD and HEAT SINK installation procedure on page 7-54.

[3] Do the FAN BRACKET ASSEMBLY installation procedure on page 7-43.

[4] Do the MOTOR BRACKET ASSEMBLY installation procedure on page 7-41.

[5] Do the DONOR SUPPLY BRACKET ASSEMBLY installation procedure on page 7-37.

[6] Do the following diagnostic tests: HEAD TEST, HEAD TEMP, DONOR TEST, and PICK/EJECT.

IMPORTANT

To make an ENGINE test print, the S1 SWITCH on the CONTROLLER CIRCUIT BOARD must be in the engine mode. After making the ENGINE test print, de-energize the printer and set the S1 SWITCH on the CONTROLLER BOARD to EXT.

[7] Make an ENGINE test print.

[8] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY closure procedure on page 7-7.

THERMAL HEAD LIFT SENSOR Removal

[1] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY access on page 7-25.

[2] Do the DONOR SUPPLY BRACKET removal procedure on page 7-35.

[3] Do the MOTOR BRACKET ASSEMBLY removal procedure on page 7-39.

[4] Locate the THERMAL HEAD LIFT SENSOR.

[5] Disconnect the CONNECTOR (no label on CONNECTOR) going to the THERMAL HEAD LIFT SENSOR.

[6] Use a *Phillips* HEAD SCREWDRIVER to remove the THERMAL HEAD LIFT SENSOR.

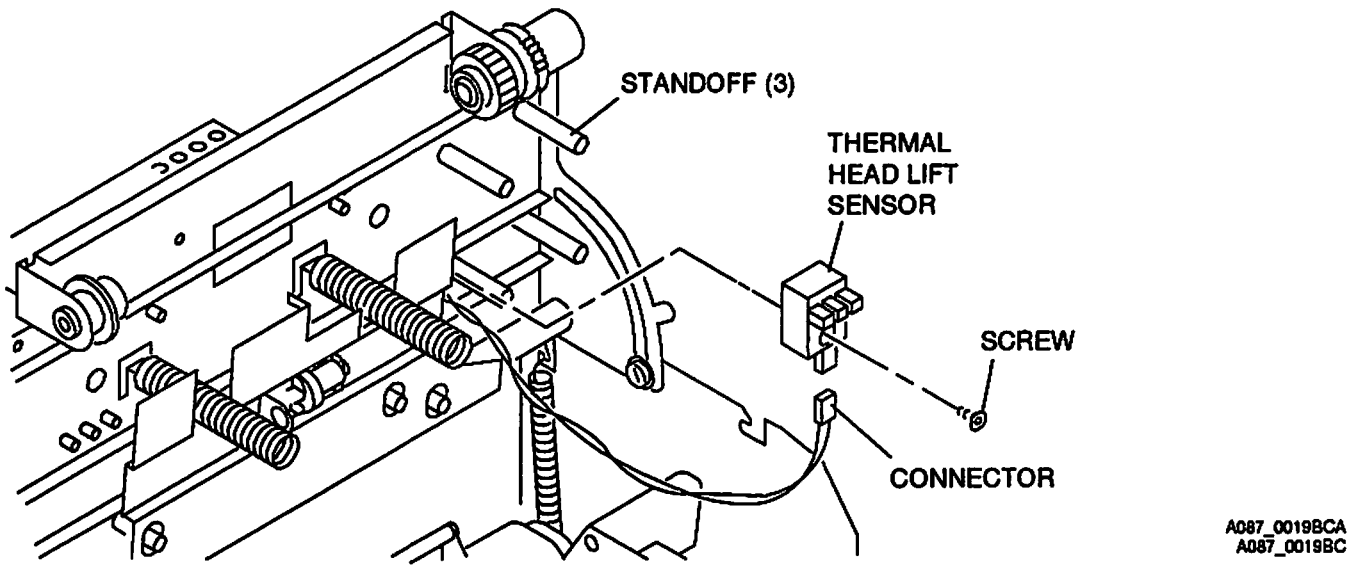

Figure 121

THERMAL HEAD LIFT SENSOR Installation

[1] Locate and install the THERMAL HEAD LIFT SENSOR on the DOOR ASSEMBLY.

[2] Install the *Allen* SCREW on the THERMAL HEAD LIFT SENSOR.

[3] Connect the CONNECTOR (no label on CONNECTOR) going to the THERMAL HEAD LIFT SENSOR.

[4] Do the MOTOR BRACKET ASSEMBLY installation procedure on page 7-41.

[5] Do the DONOR SUPPLY BRACKET ASSEMBLY installation procedure on page 7-37.

[6] Do the following diagnostic tests: HEAD TEMP, HEAD TEST, DONOR TEST, and PICK/EJECT.

[7] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY closure procedure on page 7-28.

IMPORTANT

To make an ENGINE test print, the S1 SWITCH on the CONTROLLER CIRCUIT BOARD must be in the engine mode. After making the ENGINE test print, de-energize the printer and set the S1 SWITCH on the CONTROLLER BOARD to EXT.

[8] Make an ENGINE test print.

THERMAL HEAD FUSE Removal

[1] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY access procedure on page 7-25.

[2] Do the DONOR SUPPLY BRACKET removal procedure on page 7-35.

[3] Place the THERMAL HEAD in the ENGAGE position.

[4] Locate the THERMAL HEAD FUSE under the lower side of the THERMAL HEAD HEAT SINK.

[5] Remove the SCREW holding the THERMAL HEAD FUSE.

[6] Remove CONNECTOR P4 from the CONTROLLER PRINTED CIRCUIT BOARD.

[7] Remove the white HARNESS from CONNECTOR P4.

[8] Remove the THERMAL HEAD FUSE.

THERMAL HEAD FUSE Installation

[1] Do the THERMAL HEAD FUSE removal procedure on page 7-67 in reverse order.

[2] Do the following diagnostic tests: HEAD TEMP, DONOR TEST, and PICK/EJECT.

IMPORTANT

The temperature should increase when energizing the HEATER and decrease when energizing the FANS.

IMPORTANT

To make an ENGINE test print, the S1 SWITCH on the CONTROLLER CIRCUIT BOARD must be in the engine mode. After making the ENGINE test print, de-energize the printer and set the S1 SWITCH on the CONTROLLER BOARD to EXT.

[3] Make an ENGINE test print.

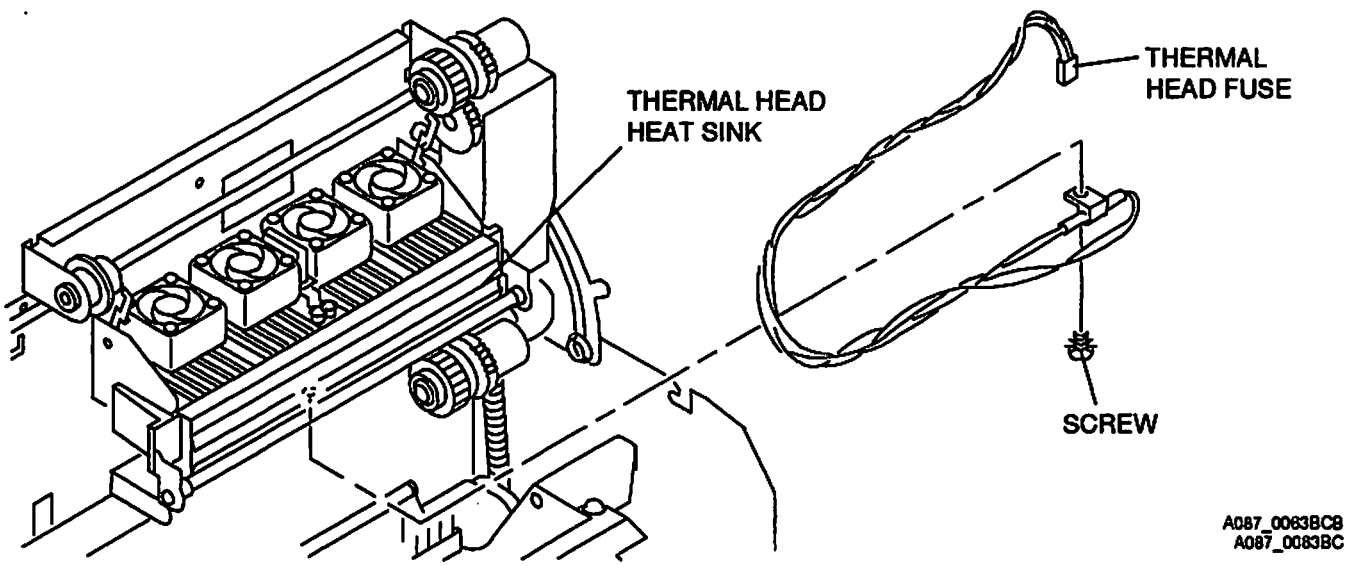

Figure 122

DOOR ASSEMBLY Removal

[1] Do the DOOR COVER removal procedure on page 7-6.

[2] Do the ENCASEMENT removal procedure on page 7-8.

[3] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY access procedure on page 7-25.

[4] Do the DONOR SUPPLY BRACKET removal procedure on page 7-35.

[5] Do the MOTOR BRACKET ASSEMBLY removal procedure on page 7-39.

[6] Do the FAN BRACKET ASSEMBLY removal procedure on page 7-42.

[7] Do the THERMAL HEAD and HEAT SINK removal procedure on page 7-44.

[8] Do the THERMAL HEAD LIFT SENSOR removal procedure on page 7-65.

[9] Remove the 2 DOOR SPRINGS from the DOOR ASSEMBLY.

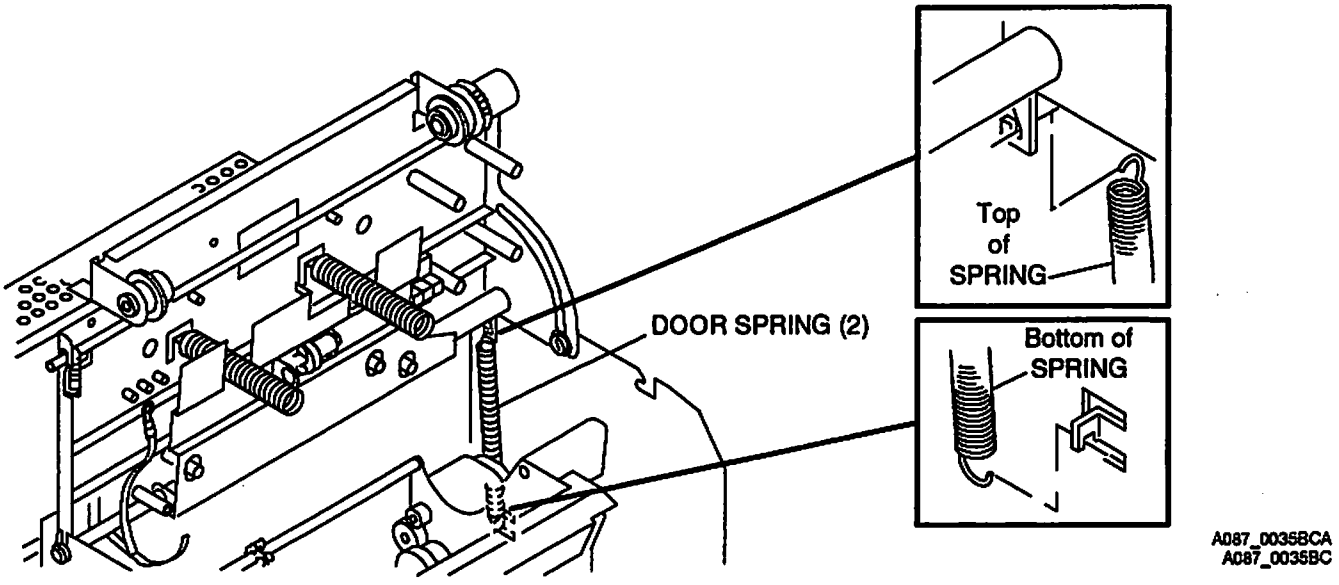

Figure 123

[10] Remove the DOOR BRAKE from the DOOR ASSEMBLY.

[11] Slide the DOOR ASSEMBLY up.

[12] Discard the DOOR ASSEMBLY.

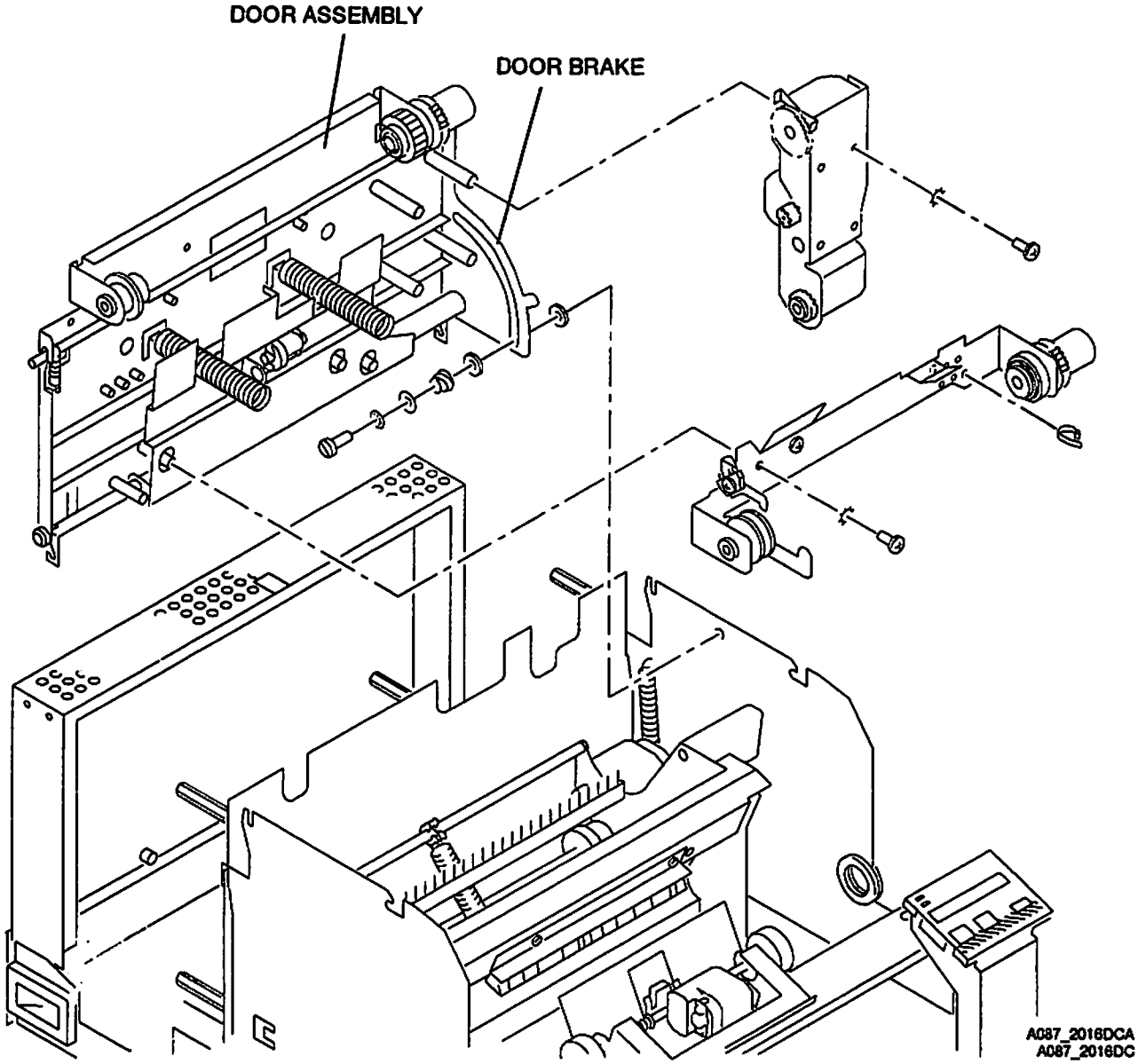

Figure 124

DOOR ASSEMBLY Installation

[1] Slide the DOOR SHAFT into the left and right side SLOTS on the BASE ENCLOSURE ASSEMBLY.

[2] Check that the SHAFT SLOTS are correctly locked into the ENCLOSURE WALLS.

[3] Install the 2 SPRINGS on the DOOR ASSEMBLY.

[4] Do the THERMAL HEAD LIFT SENSOR installation procedure on page 7-65.

[5] Do the THERMAL HEAD and HEAT SINK installation procedure on page 7-44..

[6] Do the MOTOR BRACKET ASSEMBLY installation procedure on page 7-39.

[7] Do the DONOR SUPPLY BRACKET installation procedure on page 7-35.

[8] Do the following diagnostic tests: [HEAD TEMP], [HEAD TEST], [DONOR TEST], and [PICK/EJECT].

[9] Make a test print.

[10] Do the ENCASEMENT installation procedure on page 7-10.

[11] Do the DOOR COVER installation procedure on page 7-7.

[12] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY closure procedure on page 7-25.

DOOR INTERLOCK SWITCH Removal

[1] Do the DOOR COVER removal procedure on page 7-6.

[2] Do the ENCASEMENT removal procedure on page 7-8.

[3] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY access procedure on page 7-25.

[4] Locate the DOOR INTERLOCK SWITCH on page 7-71.

[5] Locate the DOOR INTERLOCK SWITCH PLATE.

[6] Locate the 2 SCREWS on the BASE ENCLOSURE WALL.

CAUTION

Do not allow the DOOR INTERLOCK SWITCH PLATE to fall into the printer as you remove the SCREWS.

[7] Hold the DOOR INTERLOCK SWITCH PLATE and remove the 2 SCREWS from the BASE ENCLOSURE WALL.

[8] Remove the DOOR INTERLOCK SWITCH HARNESS from the GROMMET.

[9] Remove the DOOR INTERLOCK SWITCH HARNESS from the BASE ENCLOSURE WALL HOLDERS.

[10] Remove CONNECTOR P6 from the CONTROLLER PRINTED CIRCUIT BOARD.

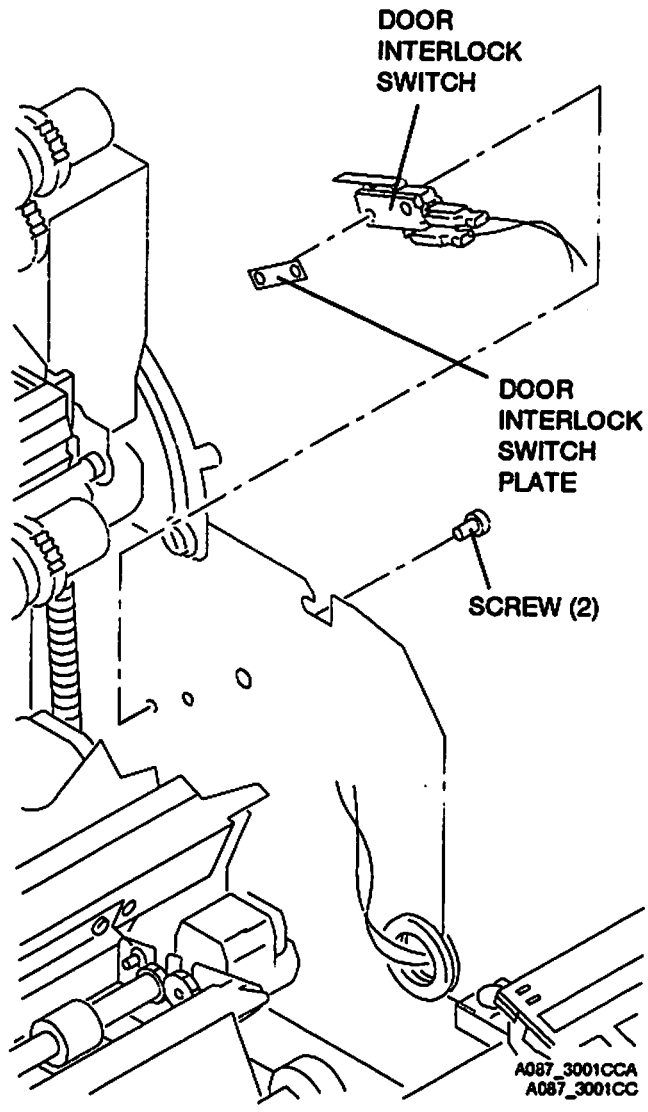

Figure 125

DOOR INTERLOCK SWITCH Installation

[1] Do the DOOR INTERLOCK SWITCH removal procedure on page 7-71 in reverse order.

[2] Mak a test print.

[3] Do the DOOR INTERLOCK SWITCH adjustment procedure on 8-11.

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POWER SUPPLY Removal

IMPORTANT

When moving the DRAWER out, do not catch or cause damage to any of the wires or CABLES.

[1] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY access procedure on page 7-25.

[2] Remove the CONNECTOR from the SPARC BOARD.

[3] Remove CONNECTOR P12 and the STRAP from the CONTROLLER PRINTED CIRCUIT BOARD.

[4] Remove the TY WRAP holding the TB2 CONNECTOR that holds the POWER SUPPLY HARNESS to the DRAWER ASSEMBLY.

[5] Slide the DRAWER out 18 in.

[6] Remove the THERMAL HEAD POWER SUPPLY CONNECTOR J1 (AC power).

[7] Remove the AC CONNECTOR TB1.

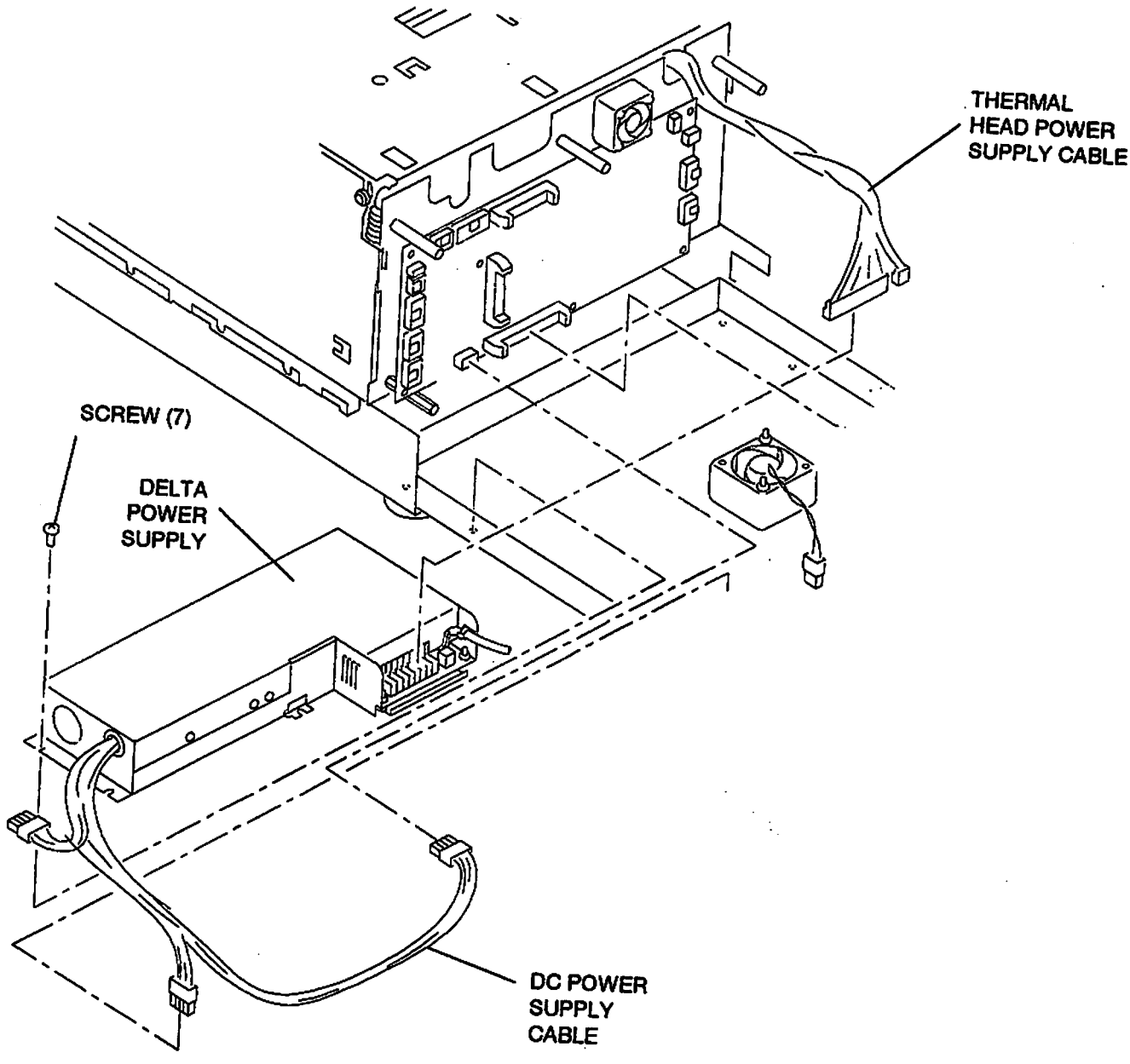
[8] Remove the 5 and 12 V DC CONNECTOR TB2.

[9] Remove the POWER SWITCH COVER.

[10] Disconnect the AC CONNECTOR (brown wire from 3 on the POWER SWITCH) on the POWER SWITCH and the blue wire on the PLUG.

[11] Remove the 7 SCREWS holding the POWER SUPPLY to the DRAWER ASSEMBLY.

[12] Remove the POWER SUPPLY.



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A087_2006DC

Figure 129

POWER SUPPLY Installation

[1] Insert the POWER SUPPLY in the DRAWER.

[2] Connect the POWER SUPPLY CONNECTORS P12 and J14 to the CONTROLLER BOARD and SPARC BOARD.

[3] Install the TY WRAP to hold the POWER SUPPLY HARNESS to the DRAWER ASSEMBLY.

[4] Connect the THERMAL HEAD CONNECTOR J1 to the POWER SUPPLY.

[5] Do the THERMAL HEAD voltage adjustment procedure on page 8-7.

[6] Make a test print.

[7] De-energize the printer.

[8] Install the 7 SCREWS to hold the POWER SUPPLY to the DRAWER ASSEMBLY.

[9] Connect the AC CONNECTOR (brown wire from 3 on the POWER SWITCH) on the POWER SWITCH and the blue wire on the PLUG.

DRAWER FAN Removal

[1] Do the CONTROLLER ENCLOSURE and DRAWER access procedure on page 7-25.

[2] Disconnect the DRAWER FAN CONNECTOR.

[3] Remove the 2 NUTS holding the DRAWER FAN to the DRAWER ASSEMBLY.

[4] Remove the DRAWER FAN.

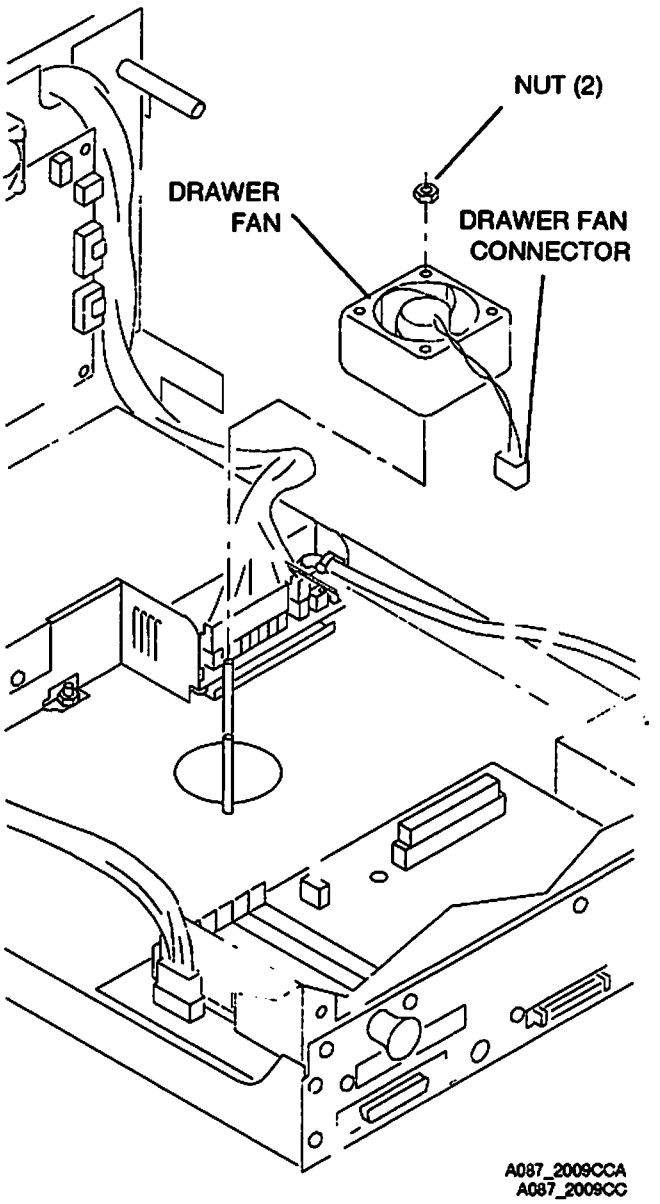

Figure 130

DRAWER FAN Installation

[1] Install the DRAWER FAN.

[2] Install the 2 NUTS on the DRAWER FAN.

[3] Install the DRAWER FAN CONNECTOR

[4] Energize the printer.

[5] Check for correct operation.

PLUG Removal

WARNING

Dangerous Voltage

[1] Disconnect the main power.

[2] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY access procedure on page 7-25.

[3] Remove the 3 SCREWS from the SAFETY COVER.

[4] Remove the SAFETY COVER.

[5] Remove the 2 SCREWS from the PLUG.

[6] Remove the PLUG.

[7] Remove the wires connected to the back of the PLUG.

PLUG Installation

WARNING

Dangerous Voltage

[1] Connect the wires to the back of the PLUG.

[2] Insert the PLUG into the hole in the back of the DRAWER ASSEMBLY.

[3] Install the 2 SCREWS in the PLUG.

[4] Install the SAFETY COVER.

[5] Install the 3 SCREWS on the SAFETY COVER.

[6] Energize the printer.

[7] Check for correct operation.

[8] Make a test print.

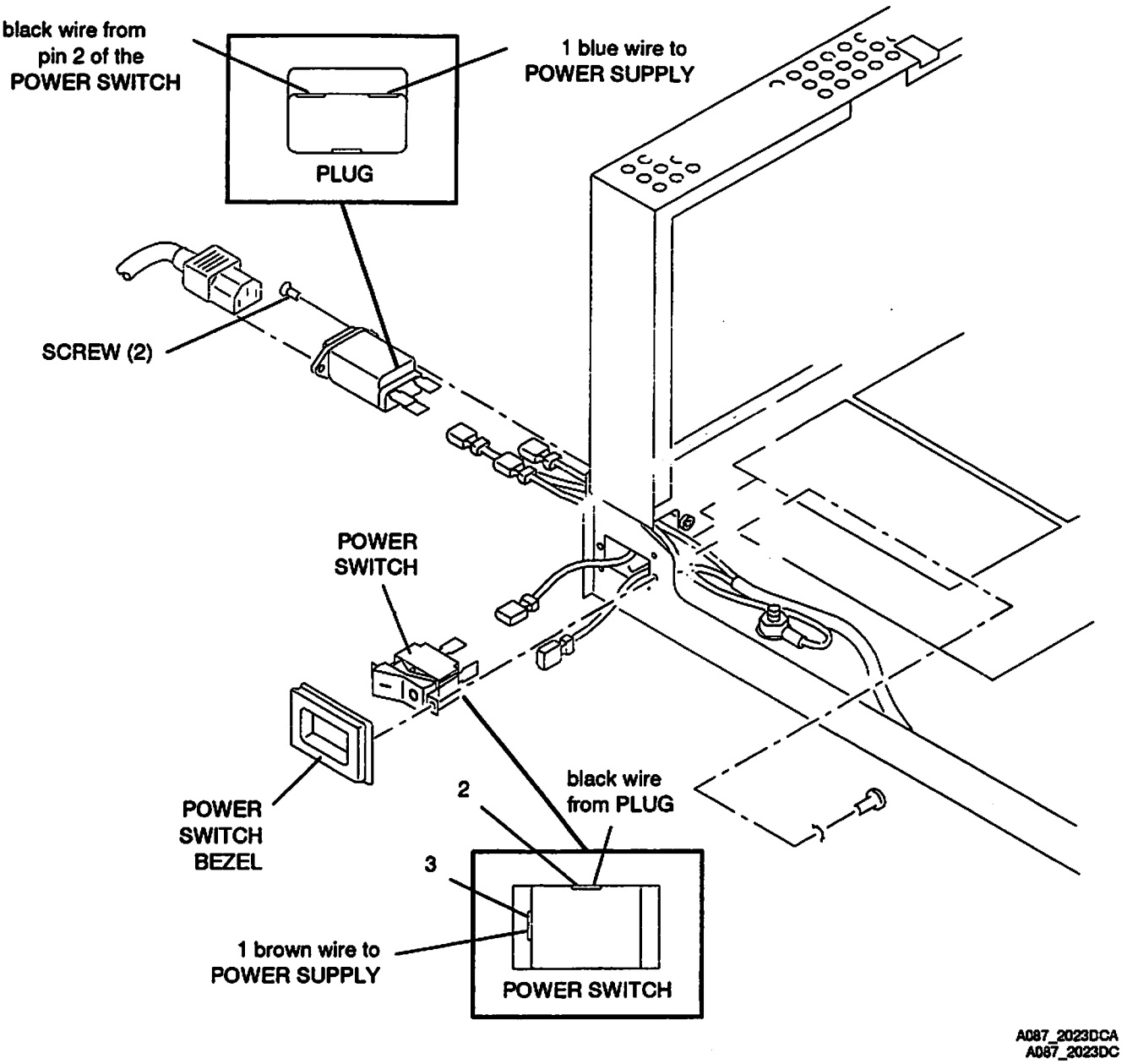
black wire from
pin 2 of the
POWER SWITCH
1 blue wire to
POWER SUPPLY
PLUG
SCREW (2)
POWER
SWITCH
POWER
SWITCH
BEZEL
2
black wire
from PLUG
3
1 brown wire to
POWER SUPPLY
POWER SWITCH
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Figure 131

POWER SWITCH Removal

[1] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY access procedure on page 7-25.

[2] Remove the 3 SCREWS from the SAFETY COVER.

[3] Remove the SAFETY COVER.

[4] Remove the wires going to the back of the POWER SWITCH.

[5] Remove the 2 inside SCREWS holding the POWER SWITCH to the DRAWER ASSEMBLY.

[6] Remove the POWER SWITCH BEZEL.

[7] Remove the POWER SWITCH.

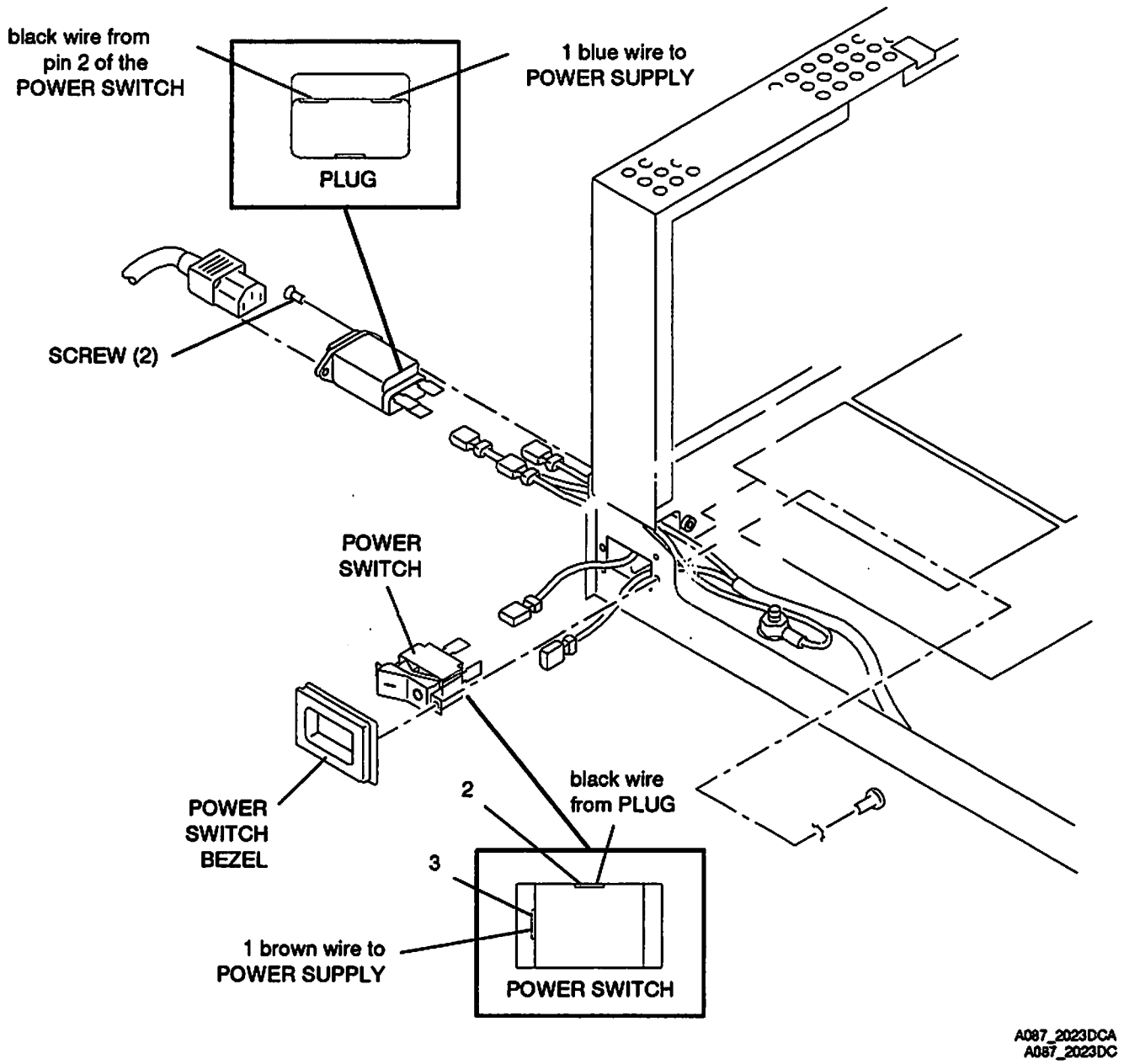

Figure 132

POWER SWITCH Installation

[1] Install the POWER SWITCH.

[2] Install the POWER SWITCH BEZEL.

[3] Install the 2 SCREWS holding the POWER SWITCH and BEZEL to the DRAWER ASSEMBLY.

[4] Install the wires going to the back of the POWER SWITCH.

[5] Install the 3 SCREWS on the SAFETY COVER.

[6] Install the SAFETY COVER.

IMPORTANT

This procedure is for the UNI-TRAY only.

[1] Remove the TRAY COVER.

[2] Remove the RECEIVERS and BLUE BOARD if installed.

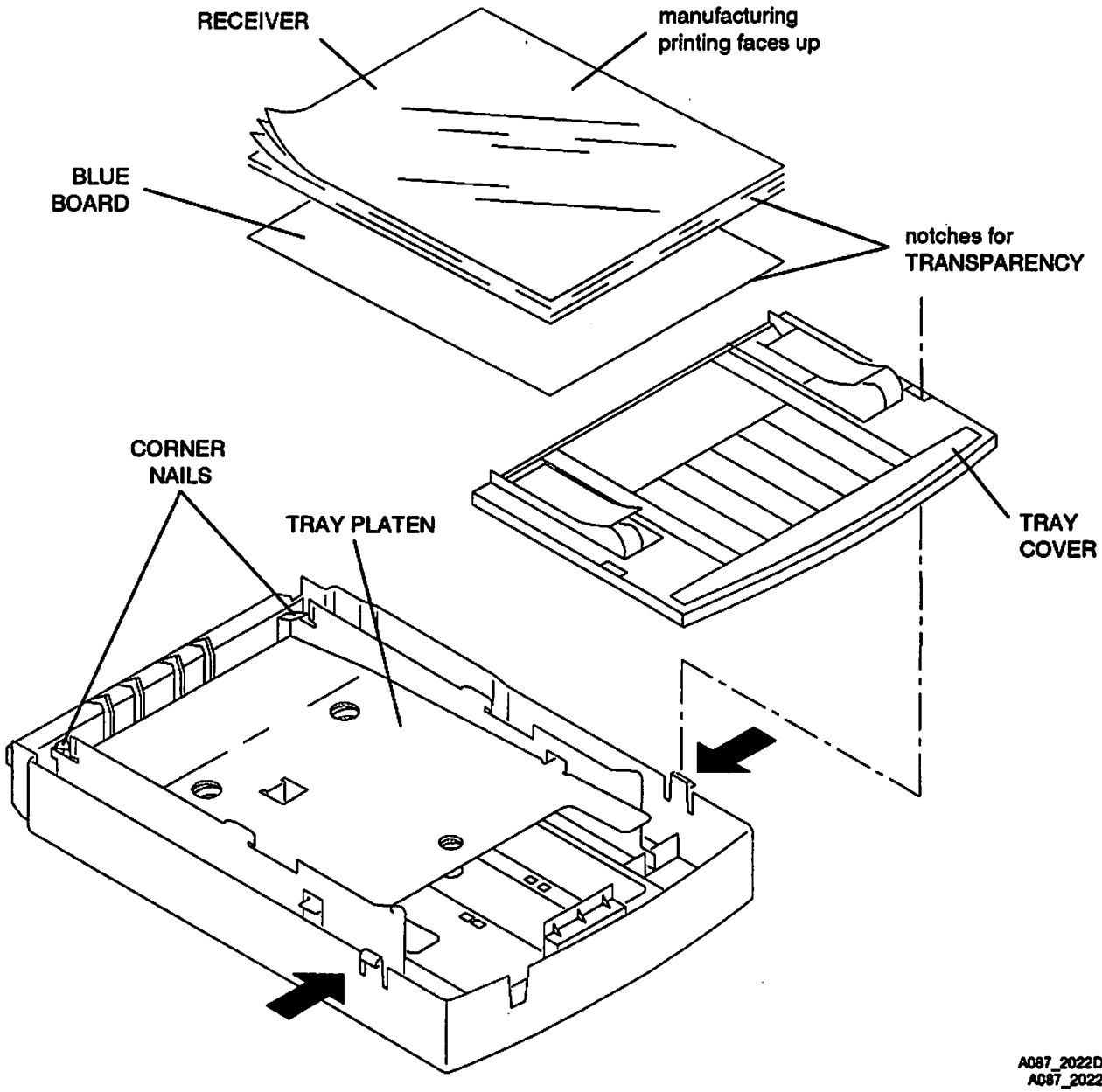

Figure 133 UNI TRAY

[3] Compress the PLATEN on the left side of the TRAY and move the LEFT WALL as shown until the LEFT PLATEN TAB is out of the LEFT PLATEN SLOT.

[4] Lift the PLATEN up from the left side and slide the PLATEN to the left.

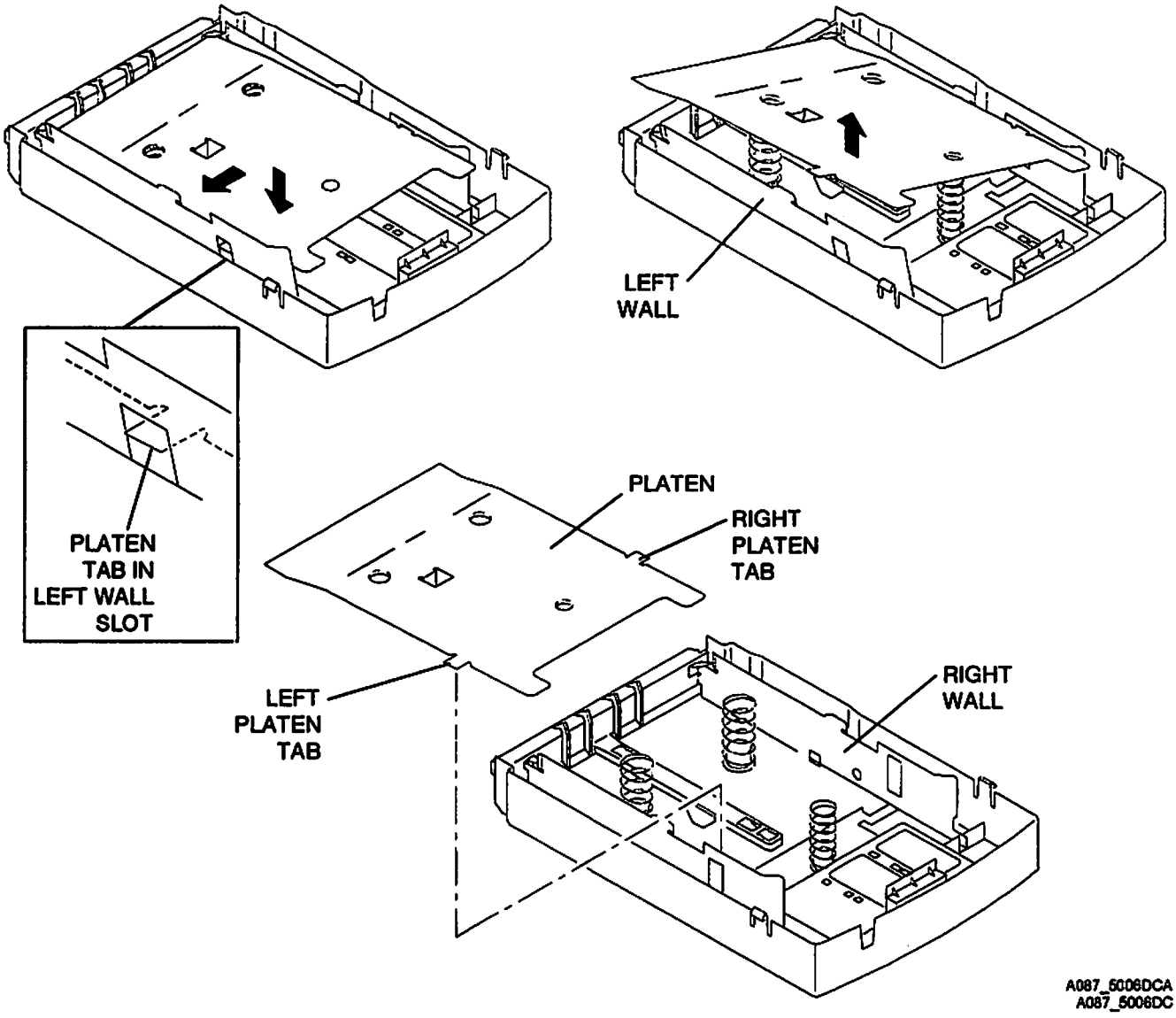

Figure 134 PLATEN Removal

[5] Check that the LEFT BIAS SPRING is connected to the LEFT WALL and the BASE of the PRINTER. If not, connect the SPRING.

[6] Check that the 2 FRONT TRAY SPRINGS are correctly seated over the plastic POSTS; the SPRINGS should be the same size.

IMPORTANT

The REAR SPRING diameter is smaller and length is shorter than the other 2 FRONT SPRINGS. The REAR SPRING does not fit over the 2 front plastic POSTS.

[7] Check that the REAR TRAY SPRING is correctly seated over the plastic POST.

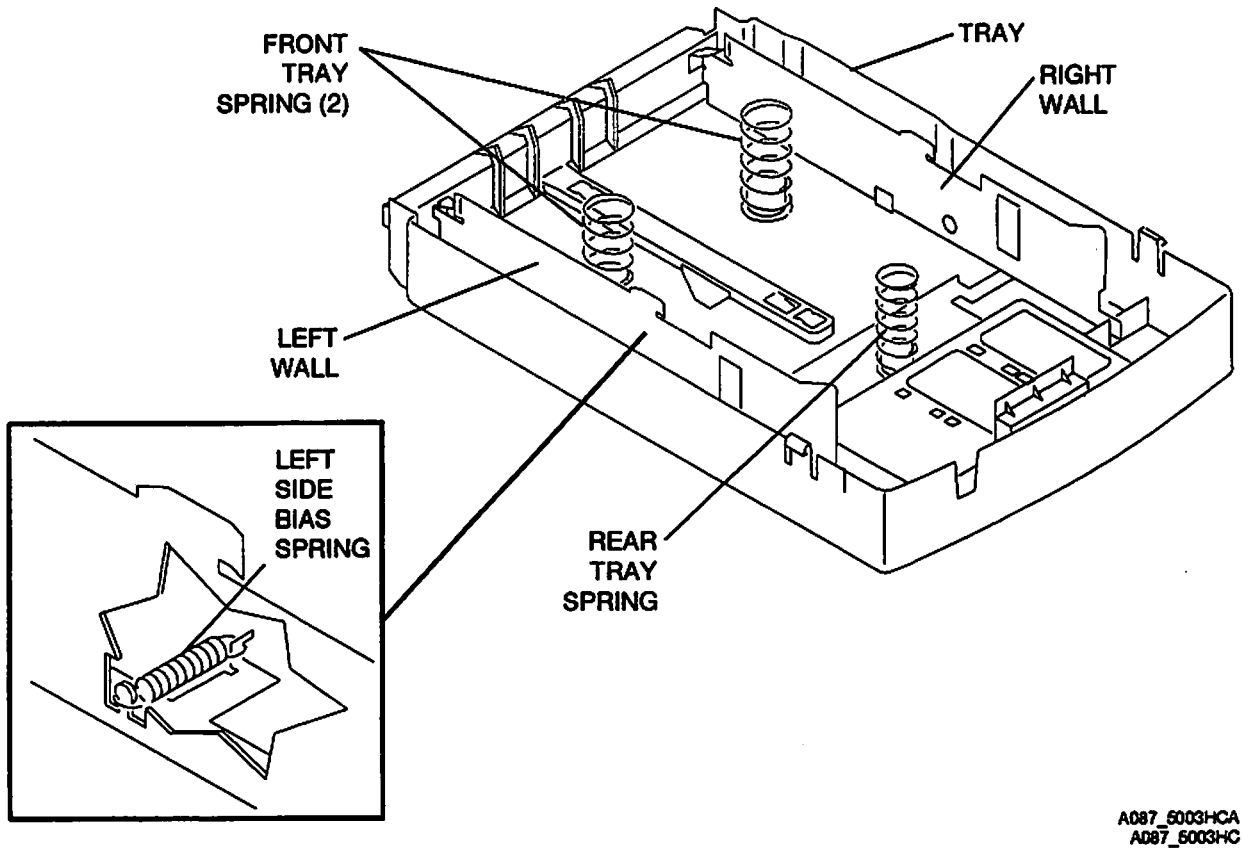

Figure 135 BASE and BIAS SPRINGS

UNI-TRAY Assembly

[1] Use the TRAY Disassembly procedure to check that all SPRINGS are in the correct location. See page 7-84.

[2] Check that the REAR of the TRAY faces you.

[3] Lift the PLATEN up and check that the hole for the REAR SPRING faces you.

[4] Insert the PLATEN in the RIGHT SIDE WALL.

[5] Check that the RIGHT PLATEN TAB is in the RIGHT WALL SLOT.

[6] Check that RIGHT front corner of the PLATEN is under the right CORNER NAIL.

[7] Push the LEFT WALL out to the left.

[8] Press the PLATEN until the left PLATEN TAB is lower than the left WALL SLOT.

[9] Release the LEFT WALL and PLATEN.

[10] Check that the LEFT PLATEN TAB is in the LEFT WALL SLOT.

[11] Check that the LEFT front corner of the PLATEN is under left CORNER NAIL.

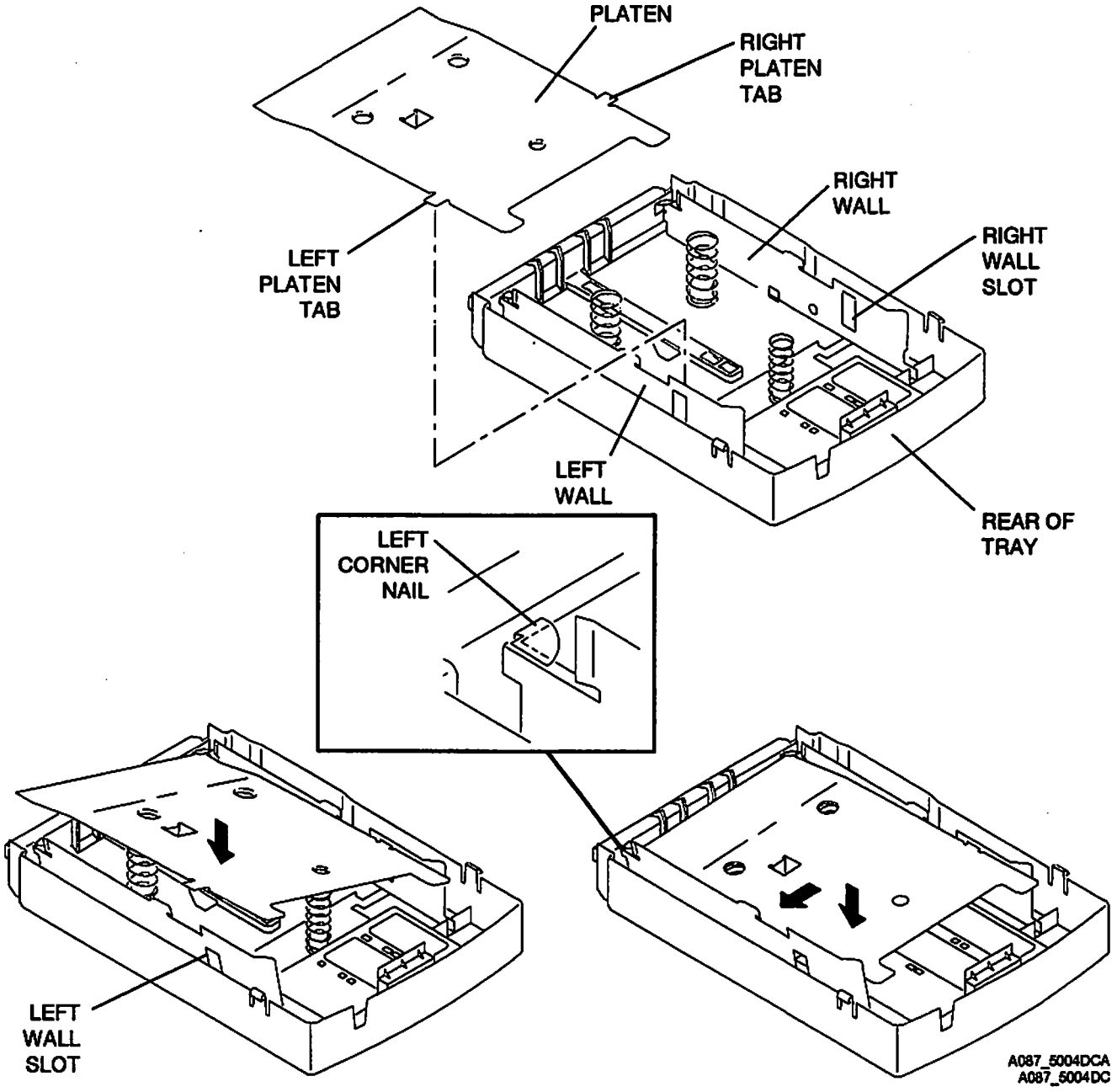

Figure 136 PLATEN Installation

[12] Check that the SPRINGS are seated correctly under the PLATEN.

[13] The original A and A4 size UNI-TRAYS do not have a PLATEN STOPPER installed. To determine if it is necessary to install a PLATEN STOPPER on the TRAY, do the following and install a STOPPER if necessary.

(a) Check that the LEFT PLATEN TAB is rectangular.

(b) Check that the PLATEN STOPPER is not installed.

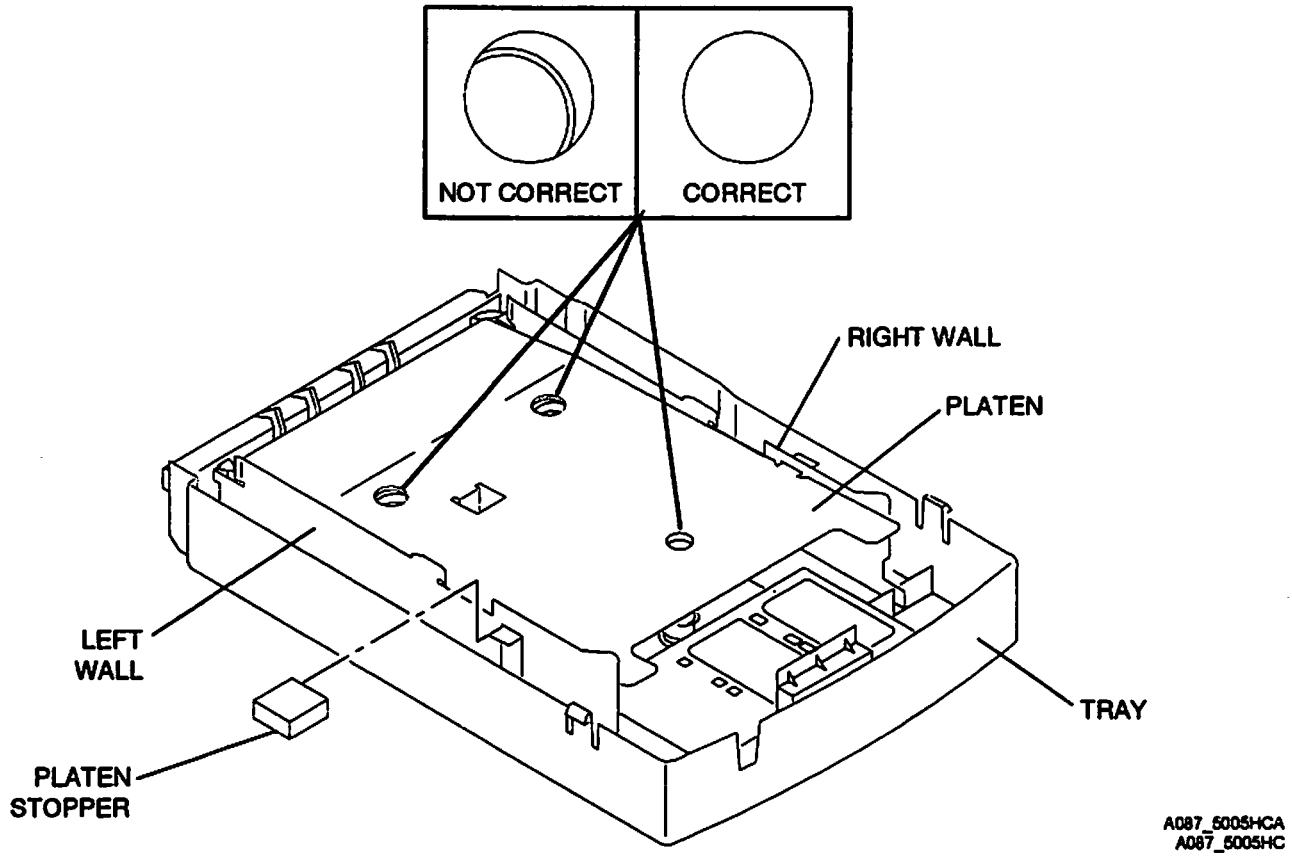

Figure 137 PLATEN STOPPER Installation

[14] Install the PLATEN STOPPER (if necessary):

(a) Press the right side of the PLATEN down.

(b) Install the PLATEN STOPPER on the LEFT PLATEN TAB.

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DRIVE STEPPER MOTOR Adjustment	8-9
DONOR Adjustment	8-10
DOOR INTERLOCK SWITCH Adjustment	8-11
BAR CODE SENSOR Adjustment	8-12
THERMAL HEAD LOAD Gap Adjustment	8-13
BASE ENCLOSURE WALLS Adjustment	8-18

IMPORTANT

(1) The printer should be energized for 5 minutes before doing any of the adjustments.
(2) Make a TEST PRINT only after you have completed all necessary adjustments.

CONNECTORS Chart

See the following page to see all CONNECTORS in the printer for the CONTROLLER BOARD.

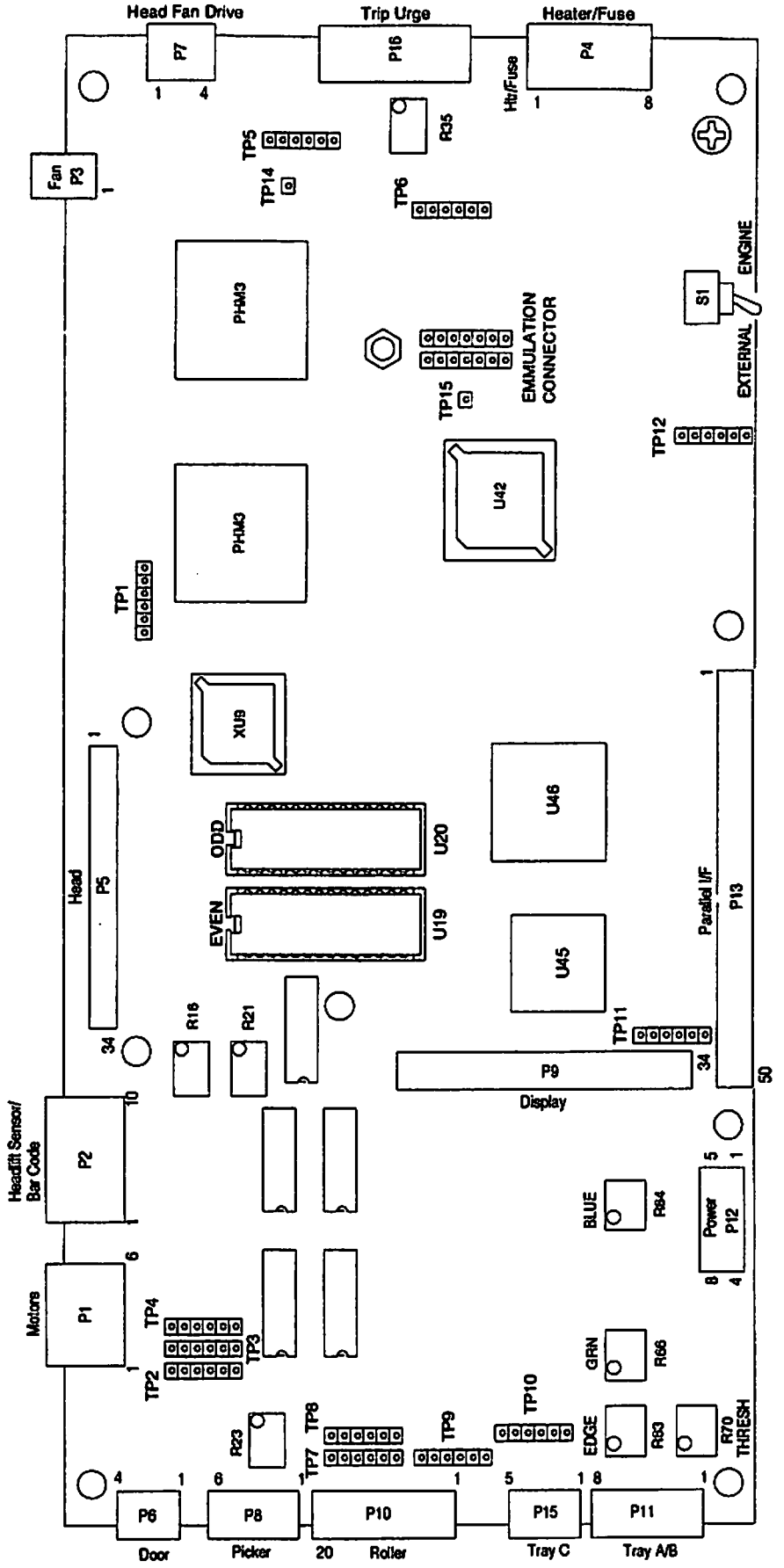

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Figure 138 CONTROLLER BOARD Component Locations

LEAD EDGE SENSOR Adjustment

IMPORTANT

Do this adjustment when a new ROLLER ASSEMBLY or CONTROLLER PRINTED CIRCUIT BOARD is installed. It might also be necessary to do this adjustment during some of the Diagnostic procedures.

[1] Set the DIGITAL VOLT METER to DC voltage.

[2] Connect the red (+) PROBE of the DIGITAL VOLT METER to TP8, PIN 3 and the black (-) PROBE to TP4, PIN 6 (ground) on the CONTROLLER PRINTED CIRCUIT BOARD.

[3] Open the DOOR ASSEMBLY.

[4] Remove the PAPER TRAY.

IMPORTANT

Use only a TRANSPARENCY for this adjustment.

[5] Insert a new TRANSPARENCY into the PICK CHUTE. The TRANSPARENCY should be in the CAPSTAN/PINCH NIP.

[6] Access the Diagnostics.

[7] Close the PINCH.

[8] Place the edge of the TRANSPARENCY in the correct position. Use the large DRIVE GEAR to move the TRANSPARENCY until it is aligned with the EXIT STATIC BRUSH or use the DIAG: STEP MOTOR forward or reverse procedure.

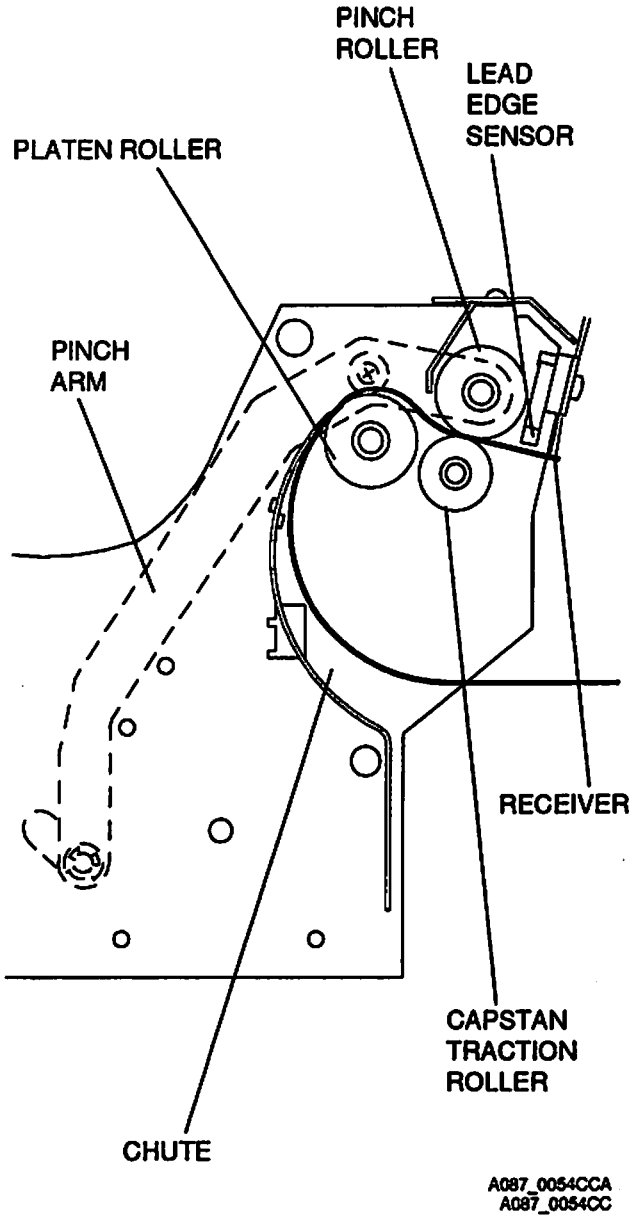

Figure 139

[9] Adjust the LEAD EDGE SENSOR POTENTIOMETER R63 until the voltage measures .18 V DC. The acceptable range of voltage for this adjustment is a minimum of .175 V DC to a maximum of .25 V DC. If the LEAD EDGE SENSOR cannot be adjusted below .25 V DC, it will be necessary to install a new ROLLER ASSEMBLY or CONTROLLER PRINTED CIRCUIT BOARD.

[10] Open the PINCH.

[11] Remove the TRANSPARENCY.

[12] Exit the Diagnostics.

[13] Check for correct operation.

[14] Make a test print.

RECEIVER THRESHOLD Adjustment

[1] Set the DIGITAL VOLT METER to DC voltage.

[2] Install the PAPER TRAY with a BLUE BOARD and one reflective RECEIVER.

[3] Connect the red (+) PROBE of the DIGITAL VOLT METER to TP 10, PIN 5 and the black (-) PROBE to TP4, PIN 6 (ground) on the CONTROLLER PRINTED CIRCUIT BOARD.

[4] Adjust R70 until the DIGITAL VOLT METER measures 1.0 V DC ± .1 V DC.

[5] De-energize the printer.

[6] Set the DVM to K Ω.

[7] Connect the red (+) PROBE to TP2, PIN 6 on the CONTROLLER PRINTED CIRCUIT BOARD.

[8] Connect the black (-) PROBE to TP8, PIN 1 on the CONTROLLER PRINTED CIRCUIT BOARD.

[9] Disconnect the PICKER ASSEMBLY CONNECTOR, P8 from the CONTROLLER PRINTED CIRCUIT BOARD.

[10] Adjust R23 to the resistance value on the LABEL that is on top of the PICKER ASSEMBLY; this value will be in K Ω. The adjustment must be within ± 200 Ω of the value that is on the PICKER ASSEMBLY LABEL.

[11] Connect P8 on the CONTROLLER PRINTED CIRCUIT BOARD.

[12] Set the DIGITAL VOLT METER to DC voltage.

[13] Connect the black (-) PROBE to TP4, PIN 6.

[14] Install an A-size TRAY with one reflective RECEIVER and BLUE BOARD.

[15] Energize the printer.

[16] Check that the voltage is > 1.5 V DC.

[17] Install an A-size TRAY with 1 TRANSPARENCY and BLUE BOARD.

[18] Check that the voltage is < 0.75 V DC.

[19] Check for correct operation.

[20] Make a test print.

THERMAL HEAD Voltage Adjustment

IMPORTANT

Do this adjustment when you install a new THERMAL HEAD, CONTROLLER PRINTED CIRCUIT BOARD, POWER SUPPLY, or when a density change is observed or necessary.

[1] Set the DIGITAL VOLT METER to DC voltage.

[2] Connect the red (+) PROBE of the DIGITAL VOLT METER to any red wire of the 14-PIN CONNECTOR. See Figure 140.

[3] Connect the black (-) PROBE to any black wire of the 14-PIN CONNECTOR on the THERMAL HEAD POWER SUPPLY CONNECTOR.

[4] To check or set the THERMAL HEAD voltage, locate the VOLTAGE SETPOINT LABEL on the right side of the THERMAL HEAD. See Figure 141. The voltage written on the VOLTAGE SETPOINT LABEL is the voltage this THERMAL HEAD should be adjusted to.

[5] Locate R523 on the POWER SUPPLY; see Figure 140. Adjust R523 to the voltage written on the VOLTAGE SETPOINT LABEL.

[6] Check for correct operation.

[7] Make a test print.

NOTE

See the next page for the voltage set-point illustration.

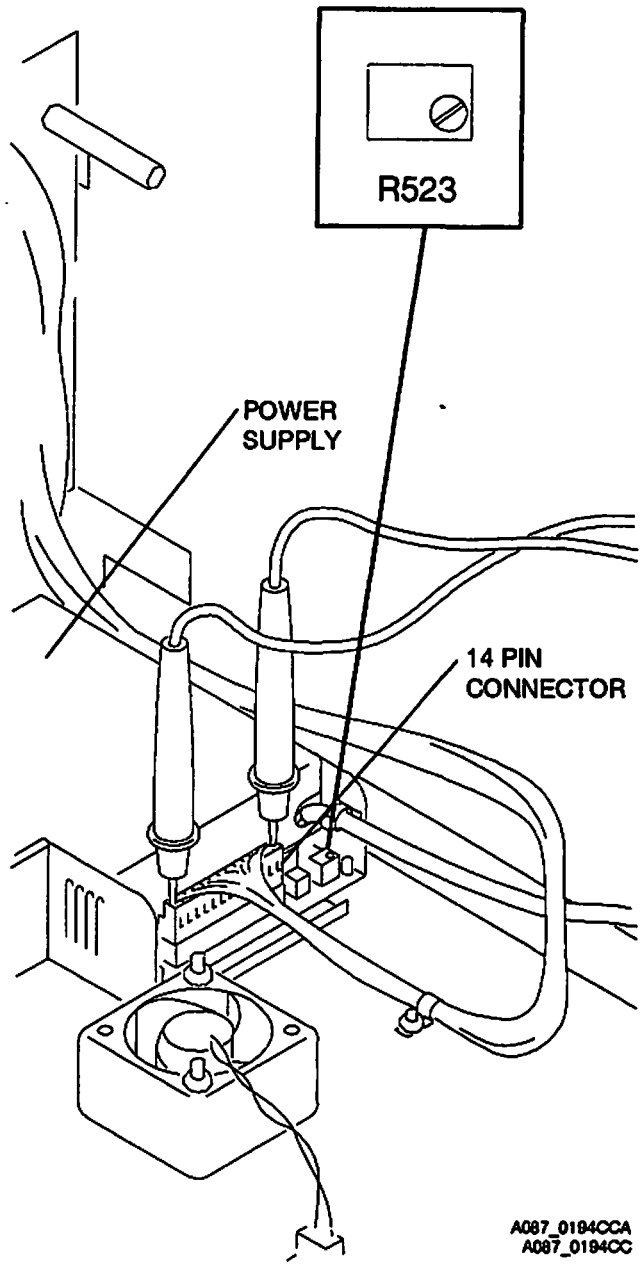

Figure 140

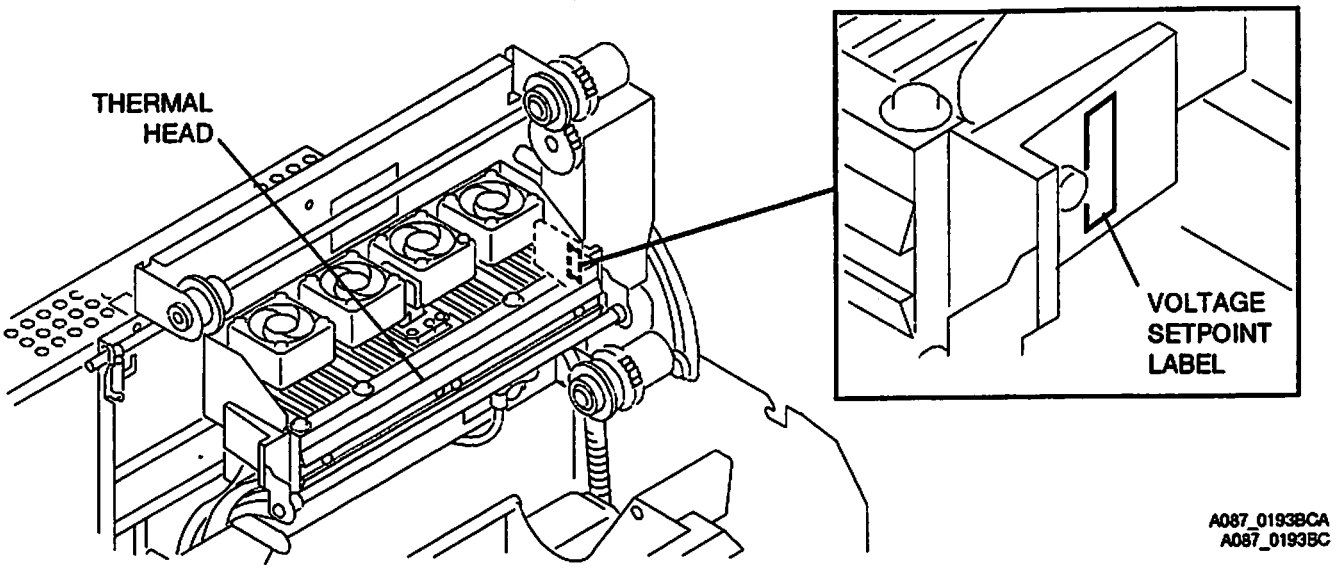
THERMAL
HEAD
VOLTAGE
SETPOINT
LABEL
A087_0193BCA
A087_0193BC

Figure 141

DRIVE STEPPER MOTOR Adjustment

IMPORTANT

Do this adjustment when a new ROLLER ASSEMBLY or CONTROLLER PRINTED CIRCUIT BOARD is installed. It might also be necessary to do this adjustment during some of the Diagnostic procedures.

[1] Set the DIGITAL VOLT METER to DC voltage 1 V or less.

[2] Connect the red (+) PROBE of the DIGITAL VOLT METER to TP10, PIN 1 and the black (-) PROBE to TP4, PIN 6 on the CONTROLLER PRINTED CIRCUIT BOARD.

[3] Adjust R21 to 0.5 V DC ± 0.01 V DC.

[4] Check for correct operation.

[5] Make a test print.

[6] Check for DRIVE STEPPER MOTOR artifacts.

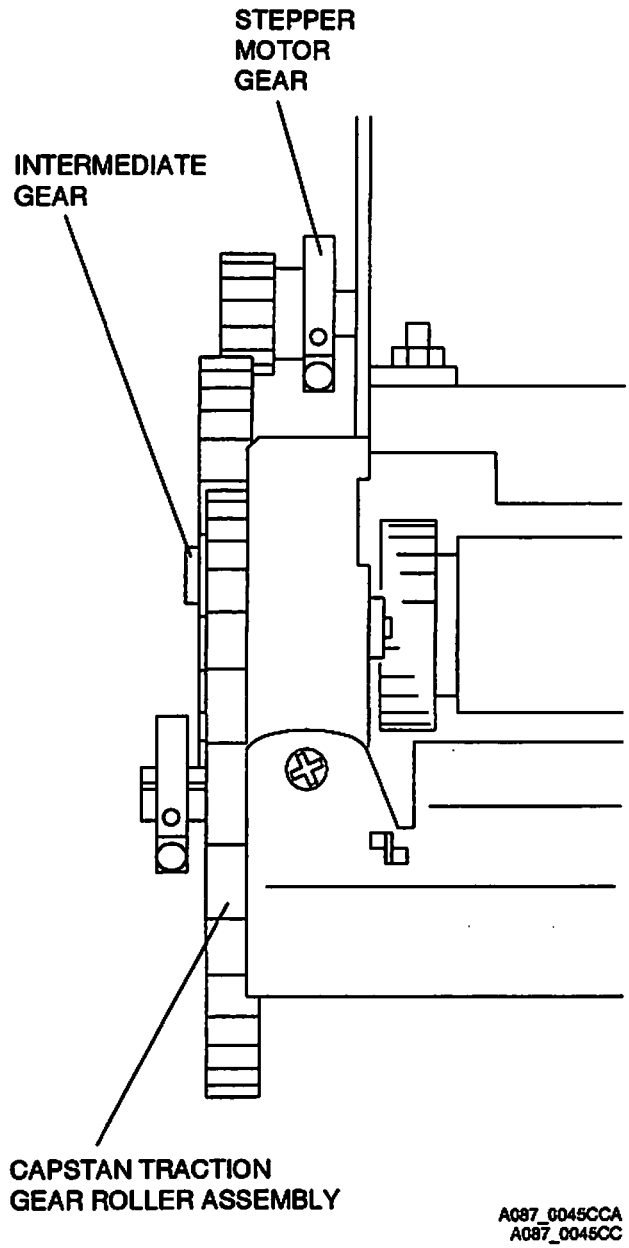

Figure 142

IMPORTANT

DONOR must be installed to do this adjustment.

[1] Enter the Diagnostics and select the DONOR test.

[2] Advance the DONOR until an unused cyan patch covers the BLUE and GREEN LEDs on the FAN BRACKET.

[3] Ignore the COLOR INDICATOR on the DISPLAY.

[4] Close the DOOR.

[5] Set the DIGITAL VOLT METER to ≈ 10 V.

[6] BLUE LED

(a) Connect the red (+) PROBE of the DIGITAL VOLT METER to TP8, PIN 6 and the black (-) PROBE to TP4, PIN 6 on the CONTROLLER PRINTED CIRCUIT BOARD.

(b) Adjust R64 to 0.3 V DC ± 0.05 V DC.

[7] GREEN LED

(a) Connect the red (+) PROBE of the DIGITAL VOLT METER to TP8, PIN 5 on the CONTROLLER PRINTED CIRCUIT BOARD.

(b) Adjust R66 to 3.9 ± .05 V DC.

[8] Select "Advance" on the DISPLAY PANEL; the display should read CLR=CYN (cyan).

[9] Continue to advance the DONOR until the display reads CLR=LAM (laminate).

[10] Open the DOOR and check that the LEDS are in the correct position; they should be over the unused part of the laminate DONOR. TP8, PIN 5 should read < .250 V DC. TP8, PIN 6 should read < .250 V DC.

[11] Advance the DONOR until the DISPLAY reads CLR=YEL. TP8, PIN 6 should read > 2.0 V DC. TP8, PIN 5 should read < .250 V DC.

[12] In the Diagnostics, advance the DONOR until the display reads CLR=MAG/BLK.

[13] TP8, PIN 6 should be > 2.0 V DC. TP8, PIN 5 should be > 2.0 V DC.

[14] Exit the diagnostics.

DOOR INTERLOCK SWITCH Adjustment

[1] After the DOOR INTERLOCK SWITCH is installed, do the following steps:

(a) Close the DOOR.

(b) Energize the printer.

(c) At this time, the LCD DISPLAY will read "READY" or "CLOSE COVER".

(d) If the LCD DISPLAY reads "CLOSE COVER", move the DOOR INTERLOCK SWITCH up and tighten the 2 SCREWS.

(e) Open and close the DOOR 3 times to check that the LCD DISPLAY reads "READY".

(f) Check for correct operation.

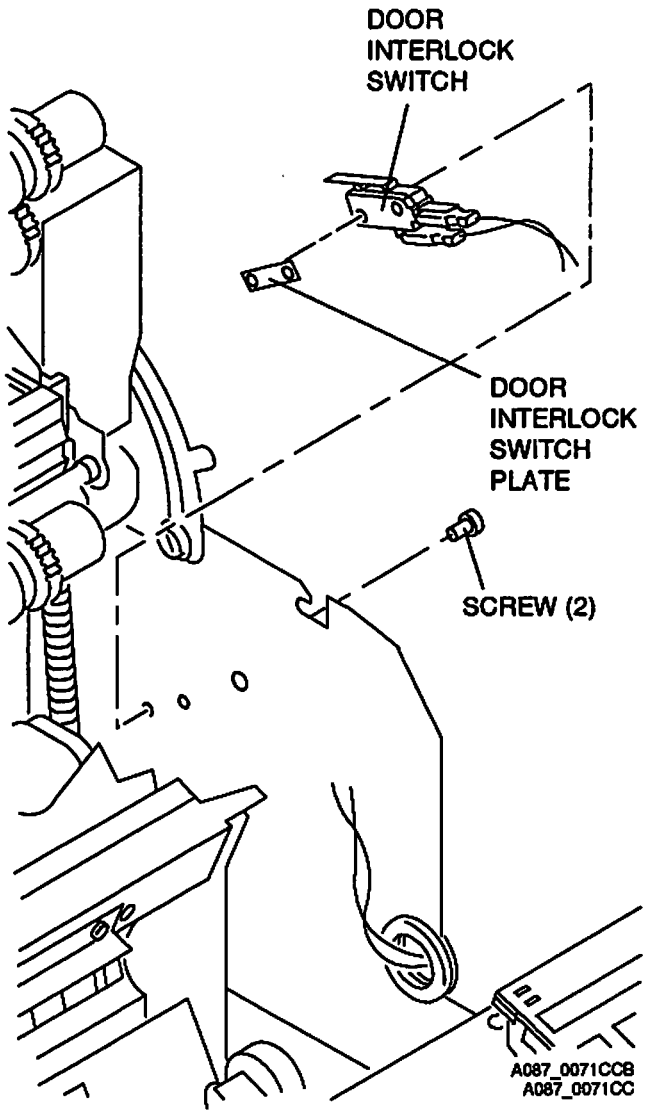

Figure 143

BAR CODE SENSOR Adjustment

IMPORTANT

Do this adjustment in low light.

[1] De-energize the printer.

[2] Open the DOOR.

[3] Install the DONOR TAKE-UP SPOOL and check that it is correctly seated.

[4] Align the DONOR TAKE-UP SPOOL BAR CODE LABEL with the BAR CODE SENSOR. Check that the BAR CODE SENSOR points toward the center of the largest white area on the BAR CODE LABEL.

[5] Set the DVM to DC voltage.

[6] Connect the POSITIVE (+) red PROBE to TP4, PIN 3 on the CONTROLLER PRINTED CIRCUIT BOARD.

[7] Connect the ground (-) black PROBE to TP4, PIN 6.

[8] Energize the printer.

[9] Adjust the CONTROLLER PRINTED CIRCUIT BOARD POTENTIOMETER R16 clockwise until a minimum voltage is reached. Record this voltage.

[10] Add 0.03 V DC to the voltage recorded in the step above and adjust the POTENTIOMETER R16 to this value, which is the set voltage.

NOTE

To determine the set voltage use this formula:
minimum voltage + added voltage (0.03 V DC) = set voltage

[11] Rotate the DONOR SUPPLY SPOOL until the BAR CODE SENSOR is aligned with the any of the large black code on the BAR CODE LABEL. The DVM should read > 4.0 V DC.

[12] Rotate the DONOR SUPPLY SPOOL until the BAR CODE SENSOR is aligned with any of the white label area on the BAR CODE. The DVM should still read the set voltage, ± 0.02 V DC.

THERMAL HEAD LOAD Gap Adjustment

IMPORTANT

- Do this adjustment only if the BASE ENCLOSURE WALLS are not in the correct position. See the BASE ENCLOSURE WALLS Adjustment on page 8-18.
- Check that the specification is correct after installing a new DOOR ASSEMBLY.
- To do this adjustment for other reasons than the 2 items above, you must contact the Thermal TAC before doing the adjustment.

Table 28 Tools

Tool	Size
Straight edge ruler	6 in., 1/32 in. increments
Phillips HEAD SCREWDRIVER	2
Allen HEAD SCREWDRIVER	1/8 in.

Table 29 THERMAL HEAD LOAD Gap Distance Specification

Description	Specification
Correct Specification	.075 ± .015 in.

[1] De-energize the printer.

[2] Do the following procedures:

- DOOR COVER Removal on page 7-6
- CONTROLLER ENCLOSURE and DOOR ASSEMBLY Access on page 7-25

[3] Energize the printer.

[4] Access the Engine Diagnostics; see the LCD Display Diagnostics section starting on page 9-1.

[5] Close the DOOR; the DOOR should remain closed during all tests.

[6] Scroll down to DIAG: HEAD TEST

[7] Use the DIAG: HEAD TEST to do the tests below.

[8] Move the THERMAL HEAD in the Engage position and record the measurements as stated in the table, then move the THERMAL HEAD to the Load position and record those measurements.

Table 30 THERMAL HEAD LOAD Gap Distance Measurement

THERMAL HEAD Position	Measure	Record as	Figure
Engage	Distance from the top of DOOR PLATE to the top of THERMAL HEAD LIFT SHAFT, left point	Left engage position distance	144
Engage	Distance from the top of DOOR PLATE to the top of THERMAL HEAD LIFT SHAFT, right point	Right engage Position Distance	144
Load	Distance from the top of the DOOR PLATE to the top of the THERMAL HEAD LIFT SHAFT, left point	Left load position distance	145
Load	Distance at the top of DOOR PLATE to the top of the THERMAL HEAD LIFT SHAFT, right point	Right load position distance	145

[9] Use the measurements you recorded and the following formulas to calculate the left and right THERMAL HEAD LOAD gap distances.

Table 31 THERMAL HEAD LOAD Gap Formulas

Description	Formula
Left THERMAL HEAD LOAD gap distance	Left THERMAL HEAD engage position measurement minus (-) Left THERMAL HEAD load position measurement
Right THERMAL HEAD LOAD gap distance	Right THERMAL HEAD engage position measurement minus (-) Right THERMAL HEAD load position measurement

[10] Is the THERMAL HEAD load gap distance within specification. See the table on page 8-13.

(a) Yes - Stop here.

(b) No - Continue.

IMPORTANT

- Adjust the ADJUSTMENT SCREWS in increments of 1 complete rotation so you can determine the degree of adjustment made.
- If the THERMAL HEAD LOAD gap distances are completely out of specification, this might indicate that the printer support walls are damaged. See BASE ENCLOSURE WALLS adjustment on page 8-18.

[11] Locate and adjust the left and right ADJUSTMENT SCREWS as necessary. See the table below and Figure 8-17.

Table 32 THERMAL HEAD LOAD Gap Distance Adjustment

Gap Distance	Direction	Action
> .090 in.	Clockwise	Decrease gap distance
< .060 in.	Counterclockwise	Increase gap distance

[12] After the adjustment, do steps 8 through 10 again to check that the THERMAL HEAD LOAD gap distance is within specification.

[13] Do steps 8 through 10 again to check that the THERMAL HEAD LOAD gap is still within specification.

[14] Contact the Thermal TAC for assistance as necessary.

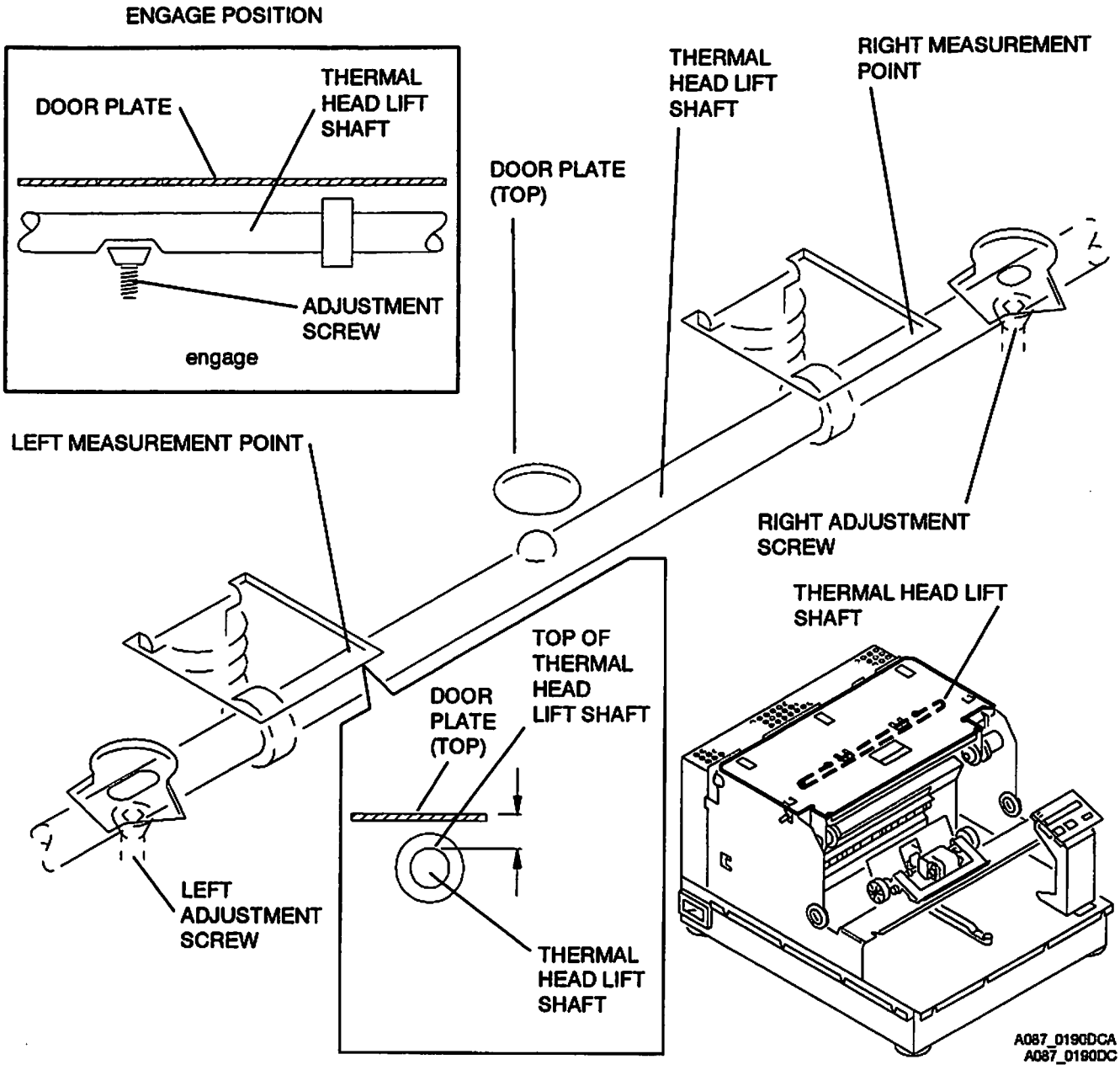

Figure 144 THERMAL HEAD Load Gap Distance Adjustment Engage Position

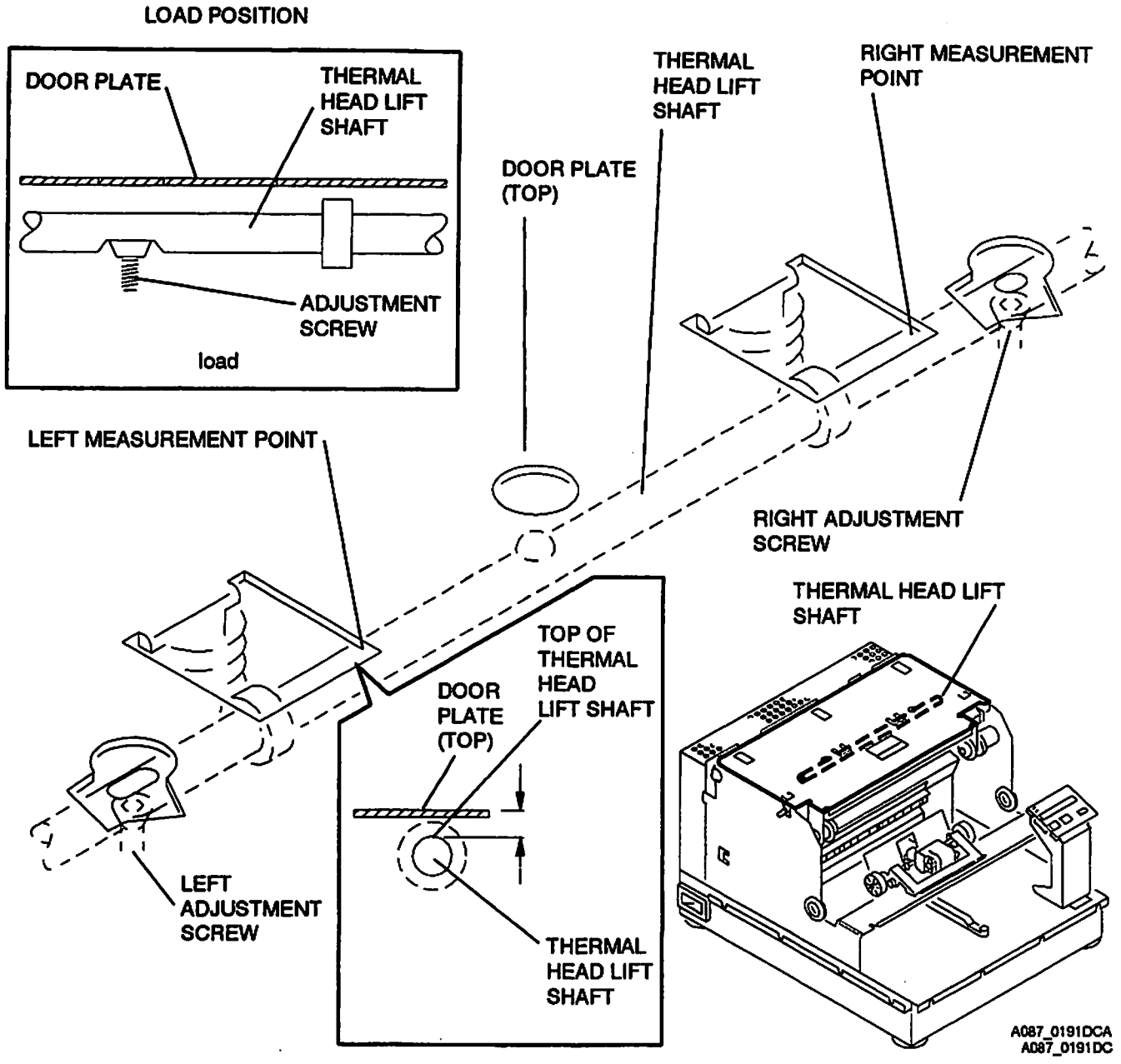

Figure 145 THERMAL HEAD Load Gap Distance Adjustment Load Position

BASE ENCLOSURE WALLS Adjustment

[1] Check that the BASE ENCLOSURE WALLS are in the correct position. This might occur during transport or if the printer has been damaged. This can cause the malfunctions listed below.

- Media jams
- DONOR advance malfunctions
- DONOR unwinds into the EXIT TRAY
- Print artifacts
- Printer does not operate

[2] If you determine the SIDE and REAR WALLS are bent, report this condition immediately. To determine if the SIDE and REAR WALLS are bent, do the procedure below.

(a) Check that the LOCKING TABS are not bent upward or sideways on the left and right sides of the printer. See the arrows in Figures 146 and 148 on page 8-19.

(b) Check that where the LEFT SIDE WALL connects with the REAR WALL is flat. See the arrows in Figure 147 on page 8-19.

(c) Check that where the RIGHT SIDE WALL connects with the REAR WALL is flat. See the arrows in Figure 149 on page 8-20.

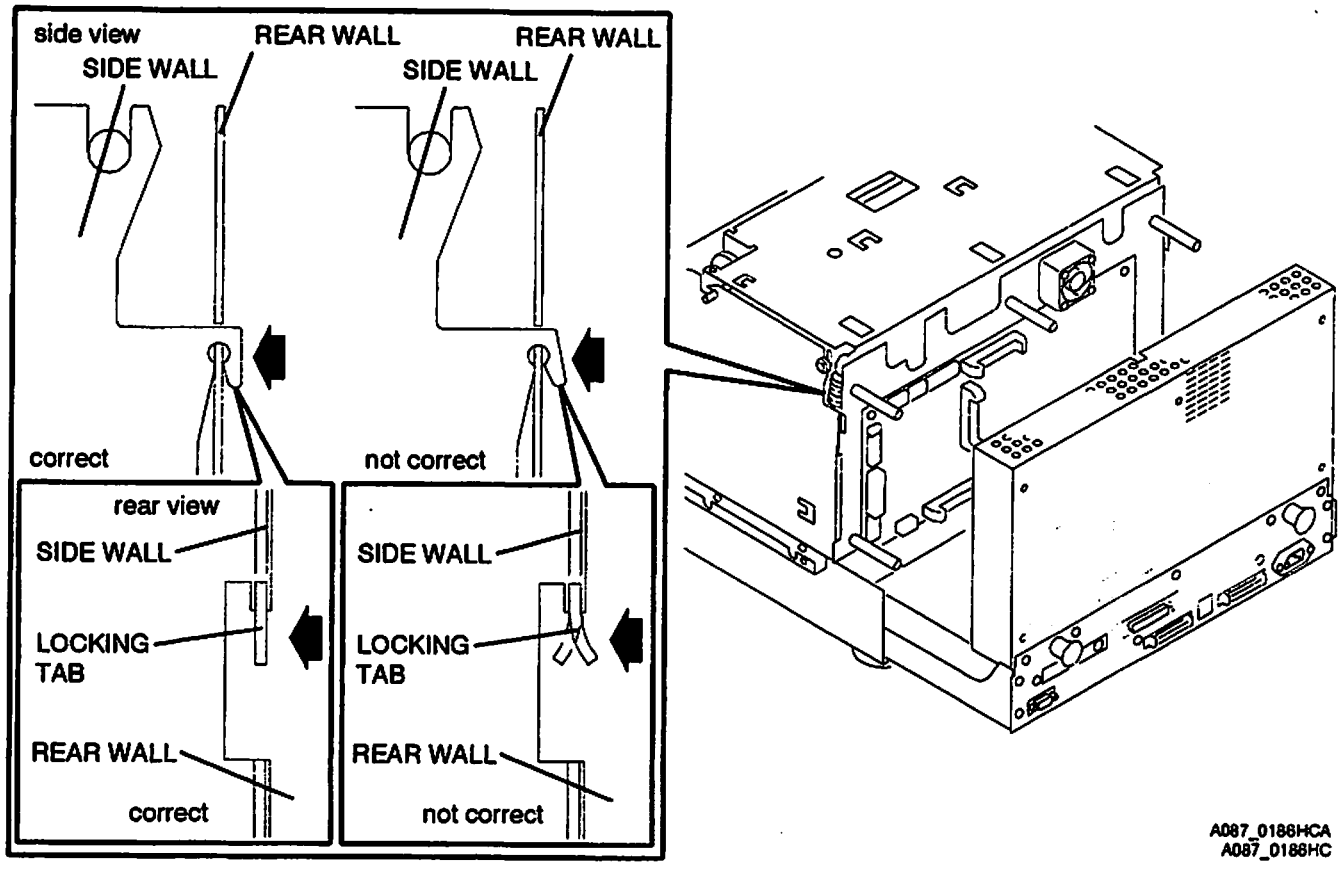

Figure 146 LEFT SIDE

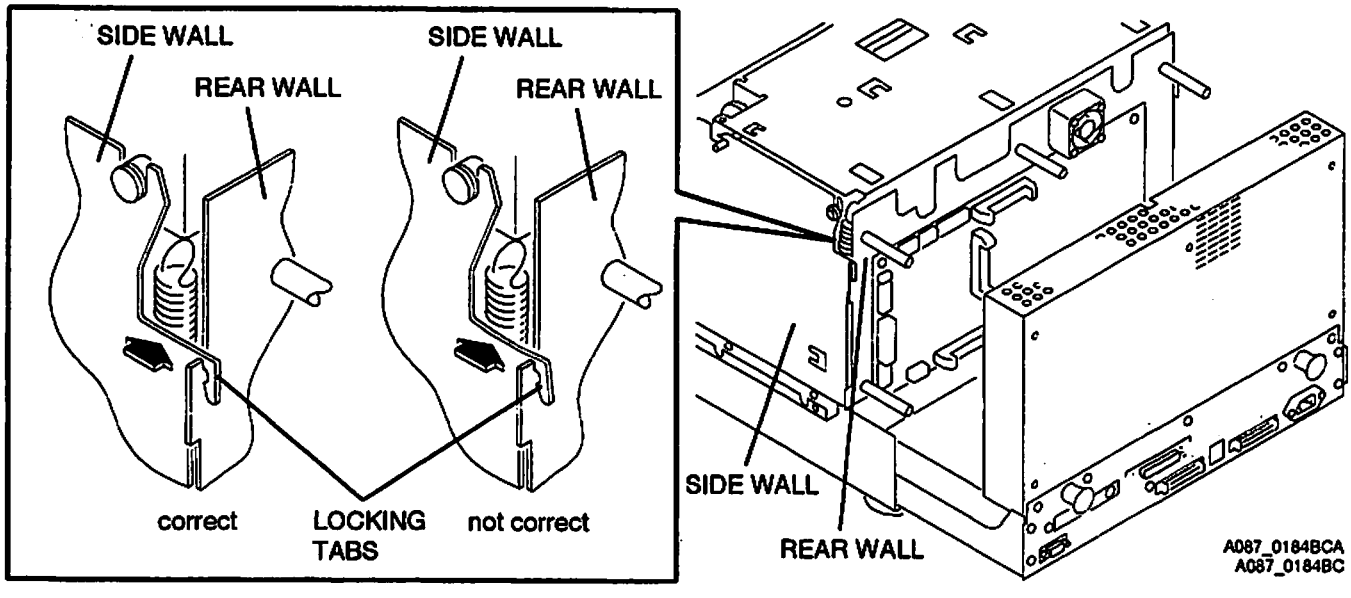

Figure 147 LEFT SIDE

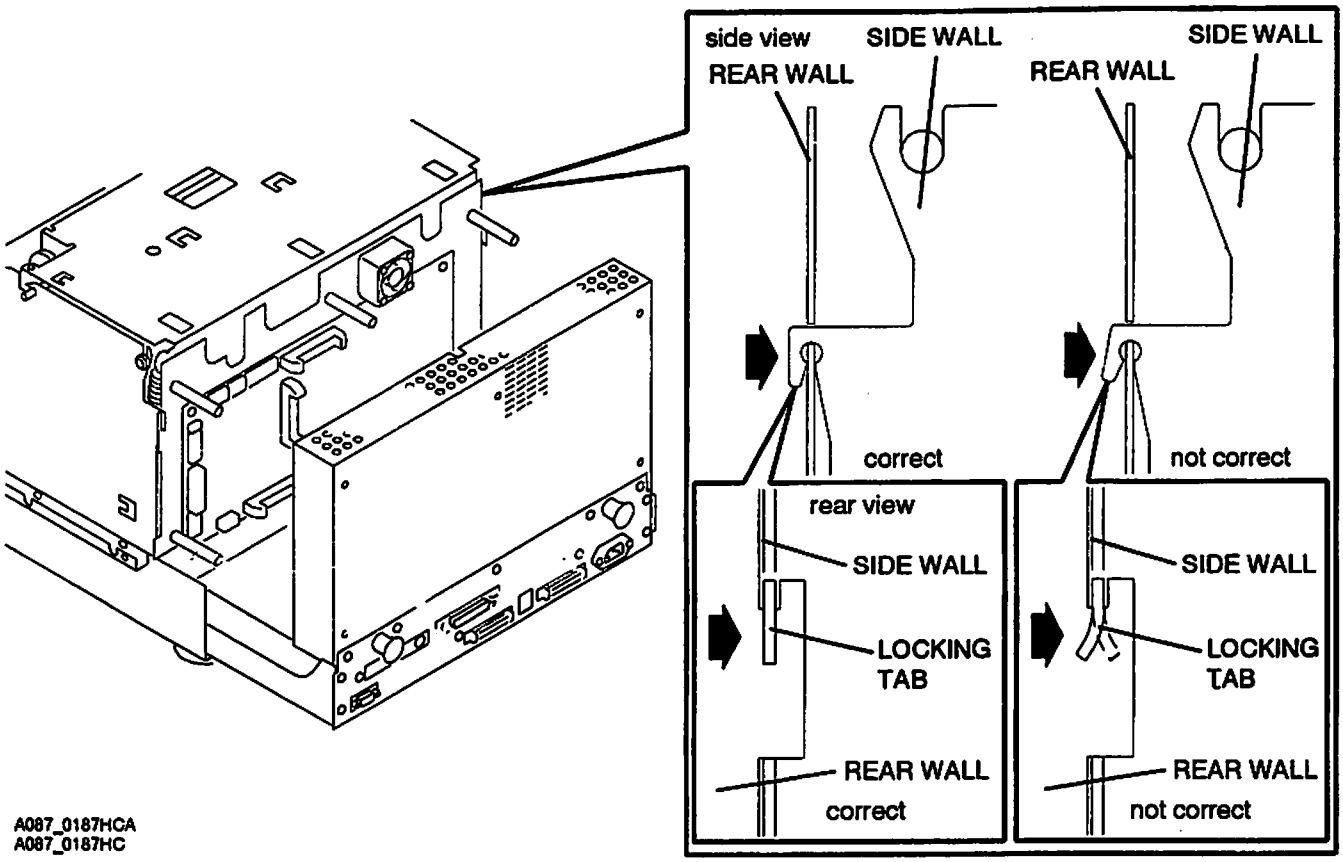

Figure 148 RIGHT SIDE

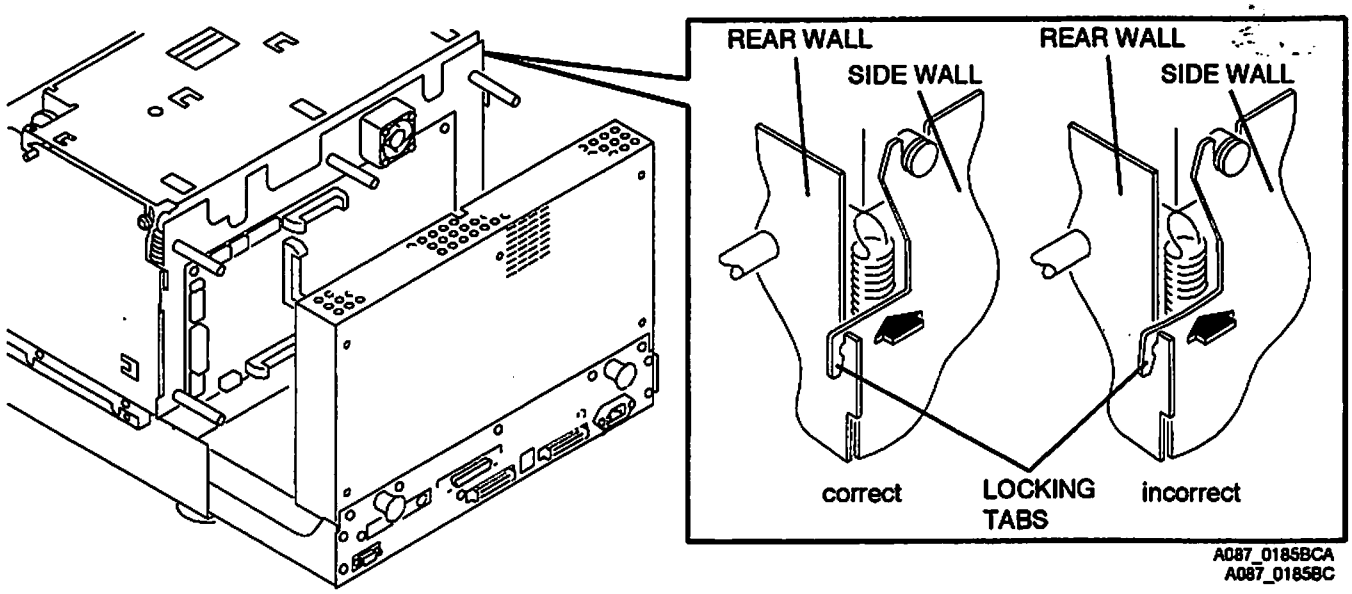

Figure 149 RIGHT SIDE

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IMPORTANT

There is a summary of the printer diagnostic system in the front of this section, along with a THERMAL HEAD regulation chart and CONNECTORS Chart. To do the diagnostics, do not use the summaries; use the step-by-step procedure that starts on page 9-9.

THERMAL HEAD Temperature Regulation

The THERMAL HEAD Temperature Regulation Chart is on the next page.

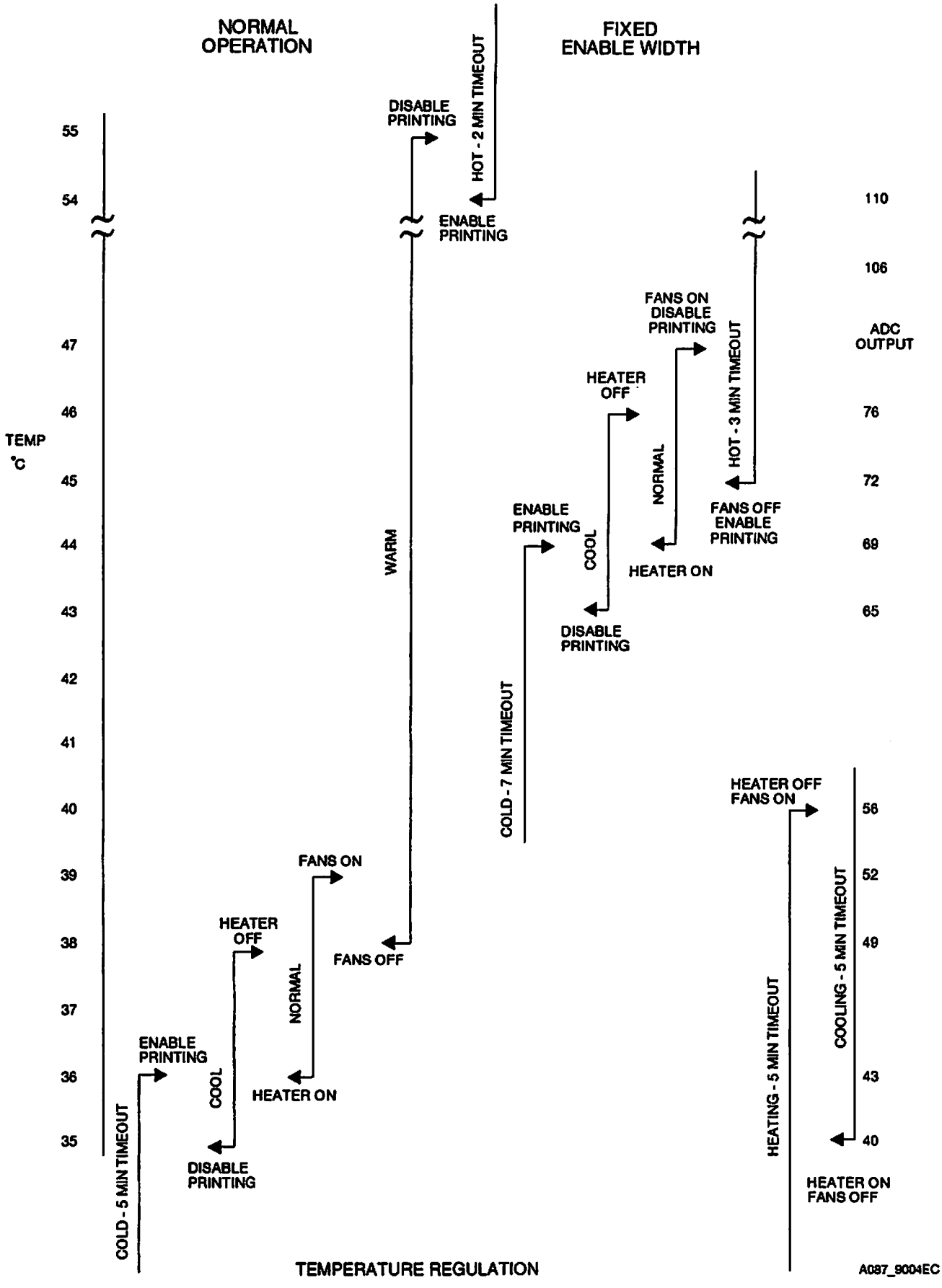

NORMAL OPERATION
FIXED ENABLE WIDTH
TEMP °C
ADC OUTPUT
55
54
47
46
45
44
43
42
41
40
39
38
37
36
35
110
106
76
72
69
65
56
52
49
43
40
DISABLE PRINTING
HOT - 2 MIN TIMEOUT
ENABLE PRINTING
WARM
FANS ON
HEATER OFF
NORMAL
FANS OFF
ENABLE PRINTING
COOL
HEATER ON
DISABLE PRINTING
COLD - 5 MIN TIMEOUT
FANS ON DISABLE PRINTING
HOT - 3 MIN TIMEOUT
HEATER OFF
NORMAL
FANS OFF ENABLE PRINTING
ENABLE PRINTING
COOL
HEATER ON
DISABLE PRINTING
COLD - 7 MIN TIMEOUT
HEATER OFF FANS ON
COOLING - 5 MIN TIMEOUT
HEATING - 5 MIN TIMEOUT
HEATER ON FANS OFF
TEMPERATURE REGULATION
A087_9004EC

Figure 150

CONNECTORS Chart

See the following page for all CONNECTORS in the printer.

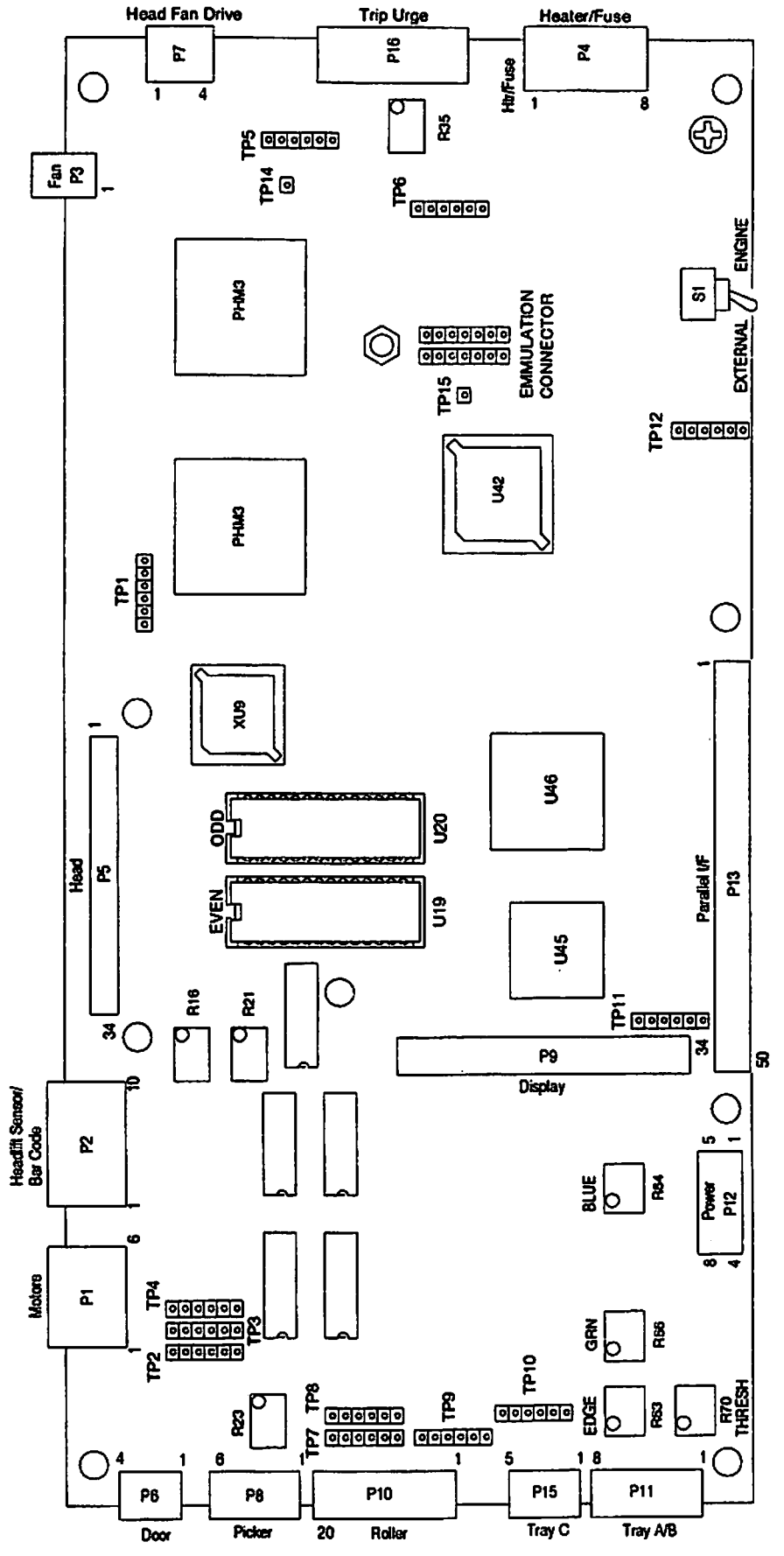


Figure 151 CONTROLLER BOARD Component Locations

Purpose and Overview of Diagnostics

The service Diagnostics are located on the CONTROLLER BOARD in the printer. External communications devices are not necessary to use the Diagnostics. The Diagnostics allow the service technician to operate the printer, retrieve service information, and do tests to diagnose malfunctions in the printer only.

Diagnostics Summary

Diagnostics can be accessed from the ENGINE/READY, ERROR and IDLE modes after the printer main power is ON, the printer is energized, and is not processing or printing any documents. The printer cannot receive documents in the Diagnostic mode.

FRONT PANEL

CAUTION

Do not use a sharp object to press the BUTTONS on the DISPLAY PANEL. This could cause malfunctions.

Use the FRONT PANEL to access all Diagnostic menus. The FRONT PANEL includes:

- POWER INDICATOR
- ERROR INDICATOR
- 16-character one-line LCD (LIQUID CRYSTAL DISPLAY)
- PRINT BUTTON
- CANCEL BUTTON
- SET-UP/SELECT BUTTONS

Test Prints

There are 2 types of test prints, user test print, and a diagnostic test print. Test prints can only be activated when the LCD DISPLAY reads "READY". The user test print can only be accessed when the printer is in the external mode. The diagnostic test print can only be accessed in the ENGINE mode. See the external mode section below.

External Mode

The external mode is the normal user mode of the printer. The external mode is controlled by the EXTERNAL/ENGINE MODE SWITCH located on the CONTROLLER PRINTED CIRCUIT BOARD.

ENGINE Mode

The ENGINE mode is used during ENGINE diagnostics and any time the service technician wants to operate the printer without interfacing with the SPARC BOARD. ENGINE mode is controlled by EXTERNAL/ENGINE MODE SWITCH located on the CONTROLLER PRINTED CIRCUIT BOARD.

By selecting only the ENGINE mode, the ENGINE is isolated for troubleshooting malfunctions.

Preliminary Set-up

The chart below lists the preliminary set-up conditions necessary to operate each diagnostic test. For example, "TRAY INSTALLED = YES" indicates the TRAY must be installed.

TRAY INSTALLED	YES/NO
DONOR INSTALLED	YES/NO
RECEIVER INSTALLED	YES/NO
RECEIVER TYPE	REFLECTIVE/TRANSPARENCY
DOOR OPEN	YES/NO
POWER ON	YES
SPECIAL FUNCTIONS	YES/NO
SPECIAL ACTIONS	

Diagnostic Menu TREE

See the Diagnostic Menu TREE on the next page for all printer diagnostics.

Thermal Printer Diagnostics Menu Tree

On Display Panel: Push and Hold Set-Up and push PRINTER, PRINTER, then CANCEL, CANCEL, and RELEASE Set-Up.

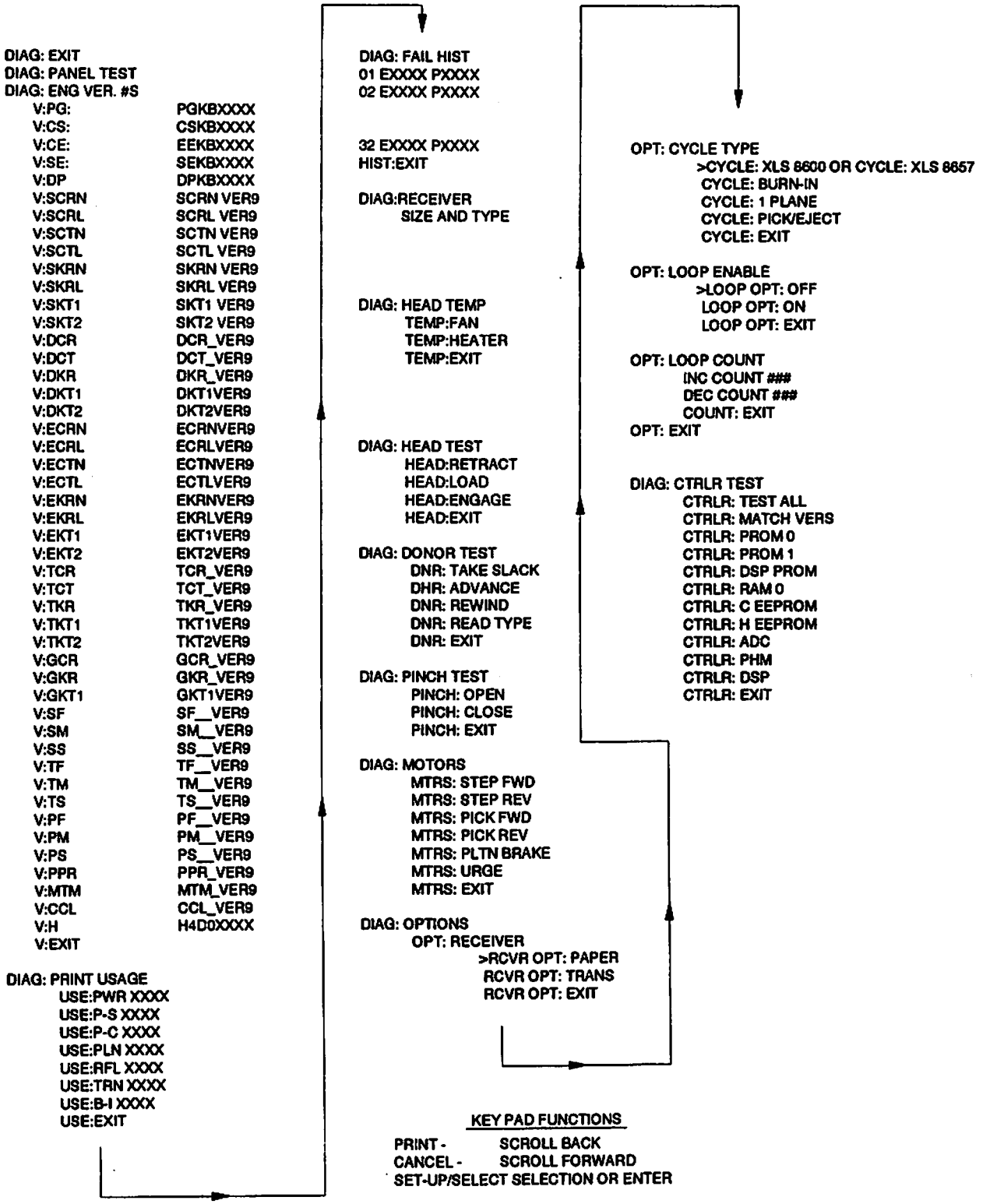


Figure 152

LCD Messages

IMPORTANT

All of the LCD messages are in [BOXES]. Any message in a BOX is the LCD message you will see displayed. The messages will be displayed on the LCD:

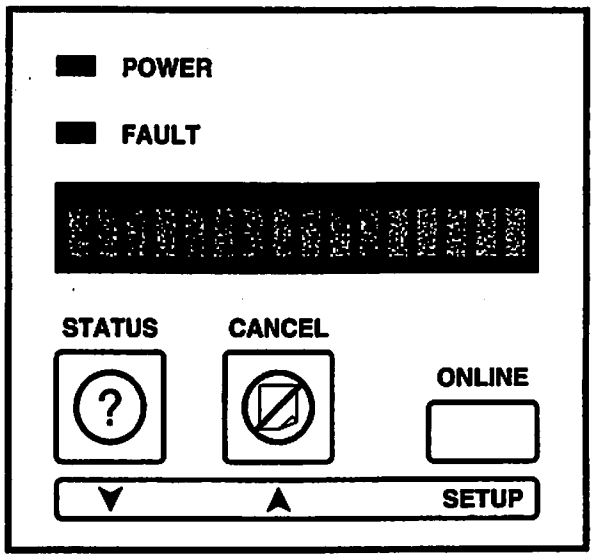


Figure 153 LCD

Preparing to Use the Diagnostics

[1] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY Access procedure on page 7-25.

[2] Remove the P13 CONNECTOR from the CONTROLLER PRINTED CIRCUIT BOARD.

[3] Check that the DIAGNOSTIC SELECTION SWITCH is in the ENGINE mode. See the Chart on page 9-4 to find the DIAGNOSTIC SELECTION SWITCH.

[4] Energize the printer.

[5] Check that the LCD reads [READY], [SERVICE REQ], [SERVICE REQ____] (4-digit error code) or any of the user errors such as [CLOSE COVER], [CHANGE DONOR], [LOAD DONOR], [INSERT TRAY], or [ENGINE READY].

[6] Open the DOOR.

[7] Install the DONOR if necessary for the test.

[8] Install a TRAY.

Entering the Diagnostics

[1] Press and hold the SETUP/SELECT BUTTON down, **DO NOT RELEASE THE SETUP/SELECT BUTTON YET.**

[2] While pressing and holding the SETUP/SELECT BUTTON down, press the PRINT BUTTON two times and the CANCEL BUTTON twice.

[3] Release the SETUP/SELECT BUTTON.

[4] The LCD will read [DIAG: EXIT]. You are now in the Diagnostic Menu.

(a) Press the CANCEL or PRINT BUTTONS to scroll through the Diagnostic Menu levels.

(b) After you select the main or top diagnostic menu, press the SETUP/SELECT BUTTON to select a SUB-MENU.

(c) To exit the diagnostics, scroll through the top menus until you reach and select [DIAG: EXIT].

(d) Press the SETUP/SELECT BUTTON to initialize the printer again and return you to where you began with [ENGINE READY], [READY], [SERVICE REQ____] (4-digit error code), [READY_CALL SERVC], [LOAD DONOR], [INSERT TRAY], [CHANGE DONOR], or any of the user errors.

[5] If you have exited the diagnostics, do steps 1, 2, 3, 4, and step 4 a to enter them again.

DIAG: PANEL TEST

The preliminary conditions are:

TRAY INSTALLED	NO
DONOR INSTALLED	NO
RECEIVER INSTALLED	NO
RECEIVER TYPE	REFLECTIVE/TRANSPARENCY
DOOR OPEN	YES
POWER ON	YES
SPECIAL FUNCTIONS	NO
SPECIAL ACTIONS	

[1] Enter the Diagnostics.

[2] Press and release the CANCEL BUTTON; the LCD will read DIAG: PANEL TEST.

[3] To operate the DIAG: PANEL TEST and begin a scrolling of characters across the LCD from right to left, press and hold the SETUP/SELECT BUTTON. The error LED will also illuminate and flash. The LCD will read HI#HI#HI#. You are now in the SUB-MENU test.

(a) The message indicates to the technician that the LCD is operating correctly.

[4] Release the SETUP/SELECT BUTTON and the LCD will return to DIAG: PANEL TEST.

[5] Press the CANCEL or PRINT BUTTONS to scroll to the correct menu, exit the diagnostics, or continue.

DIAG: ENG VER #S

The preliminary conditions are:

TRAY INSTALLED	NO
DONOR INSTALLED	NO
RECEIVER INSTALLED	NO
RECEIVER TYPE	REFLECTIVE/TRANSPARENCY
DOOR OPEN	YES
POWER ON	YES
SPECIAL FUNCTIONS	NO
SPECIAL ACTIONS	

[1] Enter the Diagnostics.

[2] Press the CANCEL BUTTON or PRINT BUTTON to scroll to the engine version numbers. The LCD will read ENG: VER #S.

[3] Press and release the SETUP/SELECT BUTTON; the LCD will read VER:PG XXXX.

[4] You are now in the SUB-MENUs.

[5] The messages in the SUB-MENUs indicate the software and/or firmware versions. This allows the technician to know the software version installed in the ENGINE and to check that all of the data is in these versions. See Figure 152 on page 9-8 for a list of all engine versions.

[6] To exit the SUB-MENU ENG VER #S, press the PRINT or CANCEL BUTTON.

[7] After you select VER: EXIT, press the SETUP/SELECT BUTTON. The LCD will read DIAG: ENG VER #S.

[8] Press the CANCEL or PRINT BUTTON to scroll to the correct menu, exit the diagnostics, or continue.

DIAG: PRN USAGE

The preliminary conditions are:

TRAY INSTALLED	NO
DONOR INSTALLED	NO
RECEIVER INSTALLED	NO
RECEIVER TYPE	REFLECTIVE/TRANSPARENCY
DOOR OPEN	YES
POWER ON	YES
SPECIAL FUNCTIONS	NO
SPECIAL ACTIONS	

[1] Enter the Diagnostics.

[2] Press and release the CANCEL or PRINT BUTTON to scroll to DIAG: PRN USAGE; the LCD will read DIAG: PRN USAGE.

[3] Press and release the SETUP/SELECT BUTTON. The LCD will read USE: PWR XXXX.

[4] Press the CANCEL or PRINT BUTTON to scroll through all the possible versions. All possible versions are listed in the table below.

NOTE

All information is stored on the E^2 ROM on the CONTROLLER PRINTED CIRCUIT BOARD except for the plane count, which is stored in the THERMAL HEAD.

Table 33 LCD Messages

LCD Message	Description
USE: PWR ____	Number of times the printer has been energized.
USE: P-S ____	Number of prints the printer has started
USE: P-C ____	Number of prints that have been completed
USE: PLN ____	Number of PLANES that have been completed by the printer
USE: RFL ____	Number of completed reflective (paper) prints made by the printer
USE: TRN ____	Number of completed TRANSPARENCIES made by the printer
USE: B-I ____	Number of burn-in accuations completed using the burn-in cycle
USE: EXIT	Exits the SUB-MENU to the top diagnostic menu

[5] The DIAG: PRN USAGE allows the technician to check the operation of the printer for feedback and possible malfunctions.

[6] To exit the DIAG: PRN USAGE versions, when the LCD reads USE: EXIT, press the SETUP/SELECT BUTTON. The LCD will read DIAG: PRN USAGE.

[7] Press the CANCEL or PRINT BUTTON to scroll to the correct menu, exit the Diagnostics, or continue.

NOTE

In the ENGINE mode, the error code will not be displayed. The LCD will read "SERVICE REQ". To find the actual error code number, you will have to check the failure history. Sometimes, the failure history will read "BAD MEM" or "NONE", indicating the loss of data in the E^2.

The preliminary conditions are:

TRAY INSTALLED	NO
DONOR INSTALLED	NO
RECEIVER INSTALLED	NO
RECEIVER TYPE	REFLECTIVE/TRANSPARENCY
DOOR OPEN	YES
POWER ON	YES
SPECIAL FUNCTIONS	NO
SPECIAL ACTIONS	

[1] Enter the Diagnostics.

[2] Press and release the CANCEL or PRINT BUTTON to scroll to DIAG: FAIL HIST; the LCD will read DIAG: FAIL HIST.

[3] Press and release the SETUP/SELECT BUTTON. The LCD will read 01 EXXXX CXXXXX.

[4] Press and release the CANCEL BUTTON; the LCD will scroll through all possible 32 failure logs. The LCD will read 01 E____ C____ through 32 E____ C____.

(a) 01 through 32 are the failure numbers, E is for error number, and P is for the print count at which the error occurred.

(b) The lower the failure number is, this indicates the most recent error. This information can be used by the technician to determine what the error is, the number of times it occurs, and the printer failure history. See the Error Code section for a description of the error codes.

[5] The last SUB-MENU will read USE: EXIT.

[6] To exit DIAG: FAIL HIST, when the LCD reads USE: EXIT, press the SETUP/SELECT BUTTON. The LCD will return to DIAG: FAIL HIST.

[7] Press the CANCEL or PRINT BUTTON to scroll to the correct menu, exit the diagnostics, or continue.

DIAG: RECEIVER

The preliminary conditions are:

TRAY INSTALLED		YES
DONOR INSTALLED		NO
RECEIVER INSTALLED		YES
RECEIVER TYPE		REFLECTIVE/TRANSPARENCY
DOOR OPEN		YES
POWER ON		YES
SPECIAL FUNCTIONS		YES
SPECIAL ACTIONS	1. To do the TRAY test, it is necessary to install and remove the TRAY. 2. To do the RECEIVER TYPE test, it is necessary to install PAPER or a TRANSPARENCY in the TRAY.	

[1] Enter the Diagnostics.

[2] Press and release the CANCEL or PRINT BUTTON to scroll to DIAG: RECEIVER; the LCD will read DIAG: RECEIVER.

[3] Press and release the SETUP/SELECT BUTTON; the LCD will read RCVR:TRAY.

[4] Press and hold the SETUP/SELECT BUTTON; the LCD will read:

- RCVR: TRAY - A when the A size TRAY is installed
- RCVR: TRAY - A4 when the A4 size TRAY is installed
- RCVR: TRAY - NONE when no TRAY is installed
- RCVR: TRAY_INDEX when the CID TRAY is installed.

(a) This test allows the technician to check the operation of the 2 TRAY SENSORS and the CONTROLLER PRINTED CIRCUIT BOARD.

[5] Release the SETUP/SELECT BUTTON.

[6] Press the CANCEL BUTTON and scroll to RCVR: TYPE.

[7] With a TRAY installed, press and hold the SETUP/SELECT BUTTON. The LCD will read:

- RCVR: TYPE PAPER when paper is installed
- RCVR: TYPE TRANS when TRANSPARENCY is installed
- RCVR: TYPE PAPER when paper is not installed

(a) This test allows the technician to check the PAPER and TRANSPARENCY SENSOR and the CONTROLLER PRINTED CIRCUIT BOARD.

[8] Release the SETUP/SELECT BUTTON.

[9] Press the CANCEL BUTTON and scroll to RCVR: EXIT.

[10] To exit DIAG: RECEIVER versions, when the LCD reads RCVR: EXIT, press the SETUP/SELECT BUTTON. The LCD will read DIAG: RECEIVER.

[11] Press the CANCEL or PRINT BUTTON to scroll to the correct menu, exit the diagnostics, or continue.

DIAG: HEAD TEMP

The preliminary conditions are:

TRAY INSTALLED		NO
DONOR INSTALLED		NO
RECEIVER INSTALLED		NO
RECEIVER TYPE		REFLECTIVE/TRANSPARENCY
DOOR OPEN		YES
POWER ON		YES
SPECIAL FUNCTIONS		YES
SPECIAL ACTIONS	1. The correct approximate range for the THERMAL HEAD temperature is 20 - 55 degrees C.	
	2. CAUTION: Do not exceed a THERMAL HEAD temperature of 55 <pi type='degree'> C.	

[1] Enter the Diagnostics.

[2] Press and release the CANCEL or PRINT BUTTON to scroll to DIAG: HEAD TEMP.

[3] Enter the Diagnostics.

[4] Press and release the CANCEL or PRINT BUTTON to scroll to DIAG: HEAD TEMP; the LCD will read DIAG: HEAD TEMP.

[5] Press and release the SETUP/SELECT BUTTON. The LCD will read TEMP: FAN.

[6] Press and hold the SETUP/SELECT BUTTON. The LCD will read ADC OUTPUT: ___ (temperature). This will turn the 4 FANS on that regulate the temperature of the THERMAL HEAD. The 3 digits on the LCD should also go down as the FANS continue to operate. This is the analog-to-digital readout of temperature.

(a) This test allows the technician to check the FAN operation, ADC, SENSORS, and the CONTROLLER PRINTED CIRCUIT BOARD to check for a change in cooling.

[7] Release the SETUP/SELECT BUTTON.

[8] Press the CANCEL BUTTON to scroll to TEMP: HEATER.

[9] Press and hold the SETUP/SELECT BUTTON; the LCD will read ADC OUTPUT: ___ (3 digits). These numbers indicate the THERMAL HEAD temperature from the ADC (analog-to-digital CONVERTER). These numbers should increase as you continue to hold the SETUP/SELECT BUTTON because you are turning the HEATER on.

(a) This test allows the service technician to check the operation of the THERMAL HEAD HEATER, ADC, SENSORS, CONTROLLER PRINTED CIRCUIT BOARD, and CONTROLLER LED.

[10] Release the SETUP/SELECT BUTTON.

[11] Press the CANCEL BUTTON and scroll to TEMP: EXIT.

[12] To exit DIAG: HEAD TEMP versions, when the LCD reads TEMP: EXIT, press the SETUP/SELECT BUTTON; the LCD will read DIAG: HEAD TEMP.

[13] Press the CANCEL or PRINT BUTTON to scroll to the correct menu, exit the diagnostics, or continue.

DIAG: HEAD TEST

CAUTION

Do not try to close the DOOR until the THERMAL HEAD is fully retracted.

The preliminary conditions are:

TRAY INSTALLED		NO
DONOR INSTALLED		NO
RECEIVER INSTALLED		NO
RECEIVER TYPE		REFLECTIVE/TRANSPARENCY
DOOR OPEN		YES
POWER ON		YES
SPECIAL FUNCTIONS		YES
SPECIAL ACTIONS	1.	CAUTION: Before opening or closing the DOOR, check that the THERMAL HEAD is in the retract position. If not, this could cause damage to the THERMAL HEAD or printer.

[1] Enter the Diagnostics.

[2] Press and release the CANCEL or PRINT BUTTON to scroll to DIAG: HEAD TEST; the LCD will read DIAG: HEAD TEST.

[3] Press and release the SETUP/SELECT BUTTON. The LCD will read HEAD: RETRACT.

[4] Press the SETUP/SELECT BUTTON and release; the LCD will read HEAD: RETRACTING until the THERMAL HEAD has reached the retracted position. See Figure 154 on page 9-18 for the THERMAL HEAD retract, load, and engage positions.

(a) This test allows the technician to test the THERMAL HEAD LIFT MOTOR, THERMAL HEAD LIFT MECHANISM, THERMAL HEAD LIFT SENSORS, and CONTROLLER PRINTED CIRCUIT BOARD. See Figure 155 on page 9-19.

[5] When the LCD reads HEAD: RETRACT, the test is complete.

[6] Press the CANCEL BUTTON and scroll to HEAD: LOAD.

[7] Press and release the SETUP/SELECT BUTTON; the LCD will read HEAD: LOADING and the THERMAL HEAD will move into the load position. See Figure 154 on page 9-18 for the THERMAL HEAD retract, load, and engage positions.

(a) This test allows the technician to test the THERMAL HEAD LIFT MOTOR, THERMAL HEAD LIFT MECHANISM, THERMAL HEAD LIFT SENSORS, and CONTROLLER PRINTED CIRCUIT BOARD.

[8] When the LCD reads HEAD: LOAD, the test is complete.

[9] Press the CANCEL BUTTON and scroll to HEAD: ENGAGE.

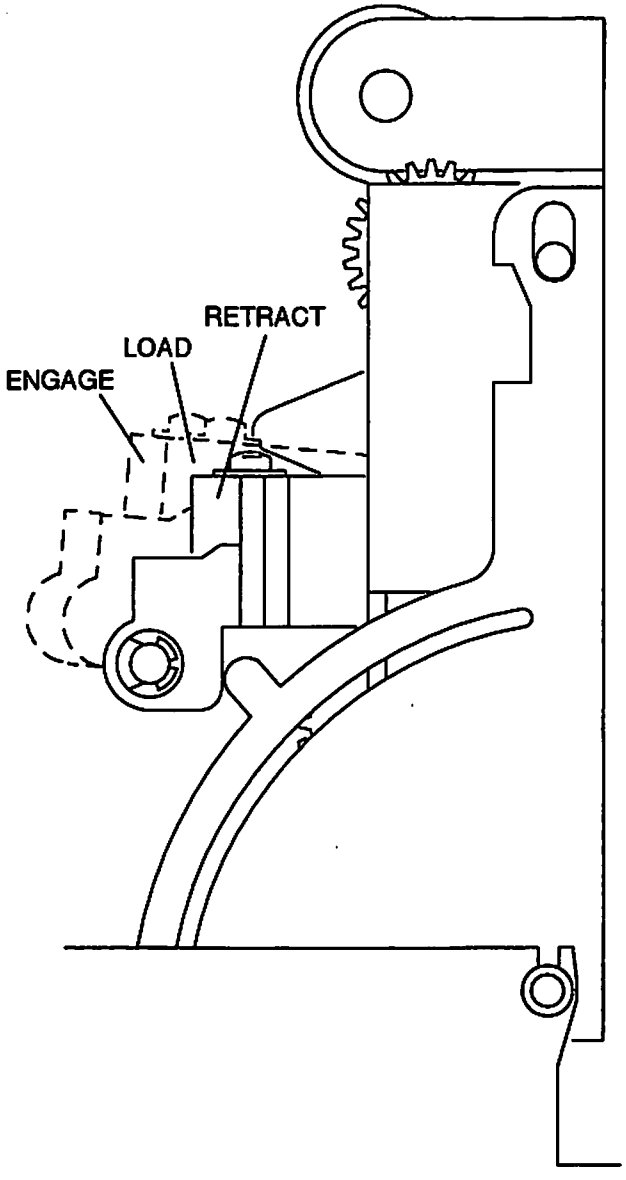


Figure 154

[10] Press and release the SETUP/SELECT BUTTON; the LCD will read [HEAD: ENGAGING]. The THERMAL HEAD will move into the engage position. See Figure 154 on page 9-18 for the THERMAL HEAD retract, load, and engage positions.

(a) This test allows the technician to test the THERMAL HEAD LIFT MOTOR, THERMAL HEAD LIFT MECHANISM, and the THERMAL HEAD LIFT SENSORS.

[11] When the LCD reads [HEAD: ENGAGE], the test is complete.

[12] Press the CANCEL BUTTON and scroll to [HEAD: RETRACT].

[13] Press and release the SETUP/SELECT BUTTON; the LCD will read [HEAD: RETRACTING].

[14] When the LCD reads [HEAD: RETRACT], check that the THERMAL HEAD is in the retract position. See Figure 154 on page 9-18.

[15] Press the CANCEL BUTTON and scroll to exit; the LCD will read [HEAD: EXIT].

[16] To exit the [DIAG: HEAD TEST], when the LCD reads [HEAD: EXIT], press the SET-UP SELECT BUTTON, the LCD will read [DIAG: HEAD TEST].

[17] Press the CANCEL or PRINT BUTTON to scroll to the correct menu, exit the diagnostics, or continue.

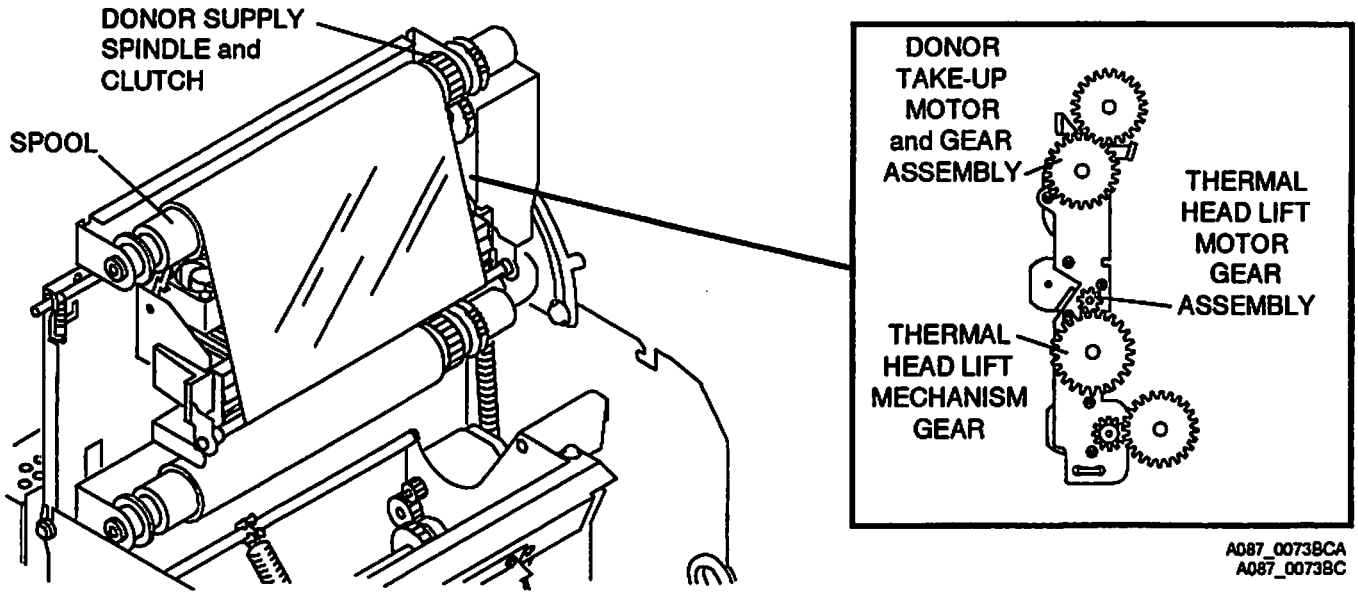


Figure 155

DIAG: DONOR TEST

The preliminary conditions are:

TRAY INSTALLED	NO
DONOR INSTALLED	YES
RECEIVER INSTALLED	NO
RECEIVER TYPE	REFLECTIVE/TRANSPARENCY
DOOR OPEN	YES at beginning of test, then NO
POWER ON	YES
SPECIAL FUNCTIONS	YES
SPECIAL ACTIONS	1. When the DONOR is first installed with the DOOR open, or anytime the DOOR is open with DONOR installed, the LCD will always read DNR: COLOR = CYN because the DONOR is not sensed. 2. Follow the procedure to check when the DOOR should be open or closed.

[1] Enter the Diagnostics with the DOOR open.

[2] Press and release the CANCEL or PRINT BUTTON to scroll to DIAG: DONOR TEST; the LCD will read DIAG: DONOR TEST.

[3] Press and release the SETUP/SELECT BUTTON; the LCD will read DNR: TAKE SLACK.

[4] Press and hold the SETUP SELECT BUTTON; the LCD will read DNR: COLOR = CYN. The DONOR SUPPLY CLUTCH will turn clockwise, adjusting the tension in the DONOR material. See Figure 155 on page 9-19.

(a) This test allows the technician to check the operation of the TAKE-UP MOTOR, SPINDLE, CLUTCH, SPOOL, and CONTROLLER PRINTED CIRCUIT BOARD.

[5] Close the DOOR.

[6] Press and hold the SETUP/SELECT BUTTON; the LCD will read DNR: COLOR = YEL, MAG, CYN or LAM, depending on the position of the DONOR PATCH in reference to the DONOR SENSORS and EMITTERS. See Figures d='78DC' type='c'> on page 9-21 and 157 on page 9-22.

(a) This test allows the technician to check the operation of the DONOR sensing system and CONTROLLER PRINTED CIRCUIT BOARD.

[7] Press the CANCEL BUTTON and scroll to DNR: ADVANCE.

[8] Press and hold the SETUP/SELECT BUTTON; the LCD will read DNR: COLOR = YEL, MAG, CYN, or LAM. The LCD will change between YEL, MAG, and CYN in that sequence. This operates the DONOR TAKE-UP and SUPPLY MOTORS. The DONOR sensing system is also detecting the 3 patches of DONOR. See Figures 156 on page 9-21 and 157 on page 9-22.

(a) This test allows the technician to check the operation of the DONOR sensing system, CONTROLLER PRINTED CIRCUIT BOARD, and the DONOR advance function.

[9] Release the SETUP/SELECT BUTTON.

[10] Open the DOOR.

[11] Press and hold the SETUP/SELECT BUTTON; the LCD will read DNR: COLOR = CYN. The DONOR SUPPLY CLUTCH GEAR will turn clockwise and the DONOR TAKE-UP CLUTCH GEAR will turn counterclockwise. See Figure 156 on page 9-21.

(a) This test allows the technician to check the DONOR TAKE-UP and SUPPLY MOTORS, CLUTCHES, SPINDLES, and the CONTROLLER PRINTED CIRCUIT BOARD.

[12] Release the SETUP/SELECT BUTTON.

[13] Press the CANCEL BUTTON to scroll to rewind; the LCD will read [DNR: REWIND].

[14] Press and hold the SETUP/SELECT BUTTON; the LCD will read [DNR: COLOR = CYN]. This operates the TAKE-UP CLUTCH GEAR counterclockwise in a step function. The SUPPLY CLUTCH GEAR will turn in a clockwise movement. See Figure 156 on page 9-21.

(a) This test allows the technician to check the DONOR TAKE-UP and SUPPLY MOTORS, CLUTCHES, SPINDLES, and the CONTROLLER PRINTED CIRCUIT BOARD.

[15] Release the SETUP/SELECT BUTTON.

[16] Close the DOOR.

[17] Press and hold the SETUP/SELECT BUTTON; the LCD will read [DNR: COLOR = CYN, MAG, YEL, or LAM]. The LCD will change between CYN, MAG, and YEL in that sequence. This operates the DONOR TAKE-UP and SUPPLY MOTORS. The DONOR sensing system is also detecting the 3 patches of DONOR. See Figures 155 on page 9-19 and 157 on page 9-22.

(a) This test allows the technician to check the operation of the DONOR sensing system, CONTROLLER PRINTED CIRCUIT BOARD, and the DONOR advance function.

[18] Release the SETUP/SELECT BUTTON; the LCD will read [DNR: REWIND].

[19] Open the DOOR. The DOOR can remain open.

[20] Press and release the SETUP/SELECT BUTTON; the LCD will read [DNR: READ TYPE].

[21] Press and hold the SETUP/SELECT BUTTON; the LCD will read [DNR: COLOR=CYN].

[22] Press the CANCEL BUTTON and scroll to exit; the LCD will read [DNR: EXIT].

[23] To exit the [DIAG: DONOR TEST], when the LCD reads [DONOR EXIT], press the SET-UP SELECT BUTTON; the LCD will read [DIAG: DONOR TEST].

[24] Press the CANCEL or PRINT BUTTON to scroll to the correct menu, exit the diagnostics, or continue.

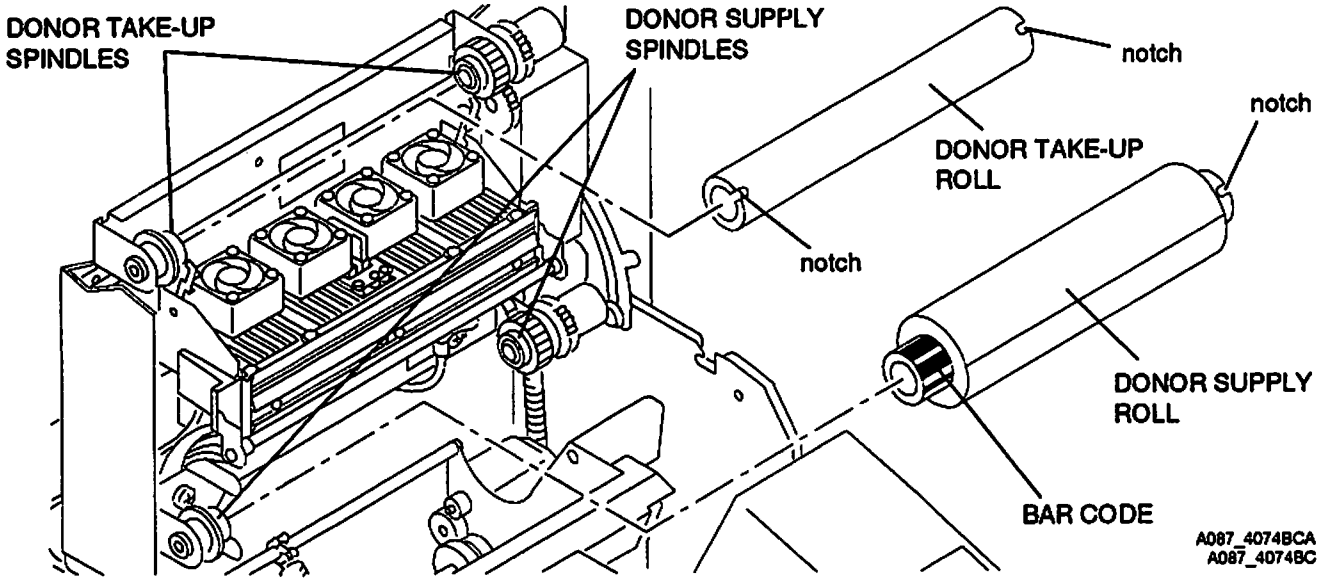


Figure 156

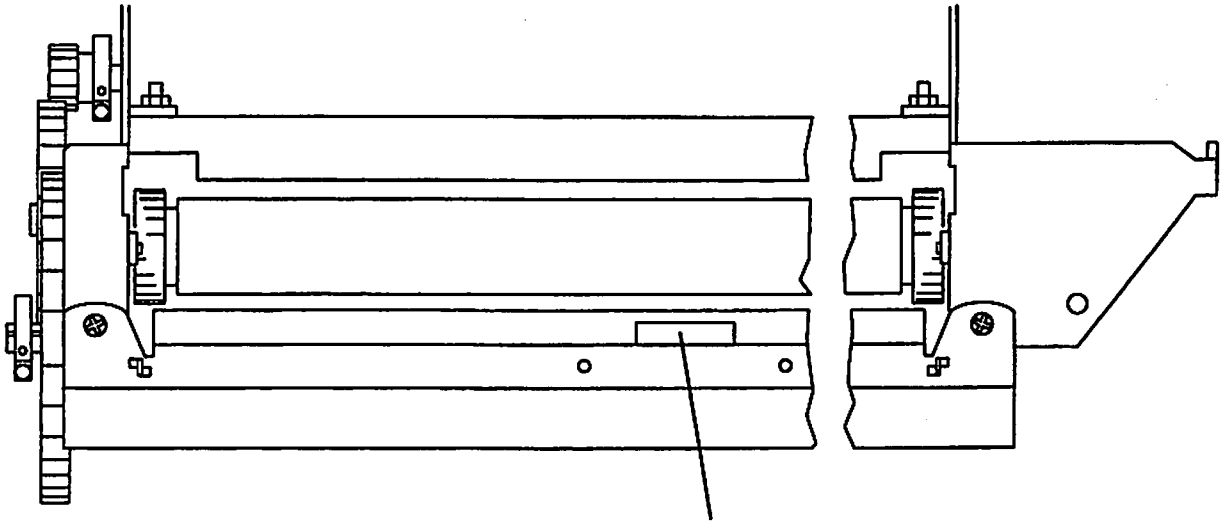


Figure 157

DIAG: PINCH TEST

The preliminary conditions are:

TRAY INSTALLED		NO
DONOR INSTALLED		NO
RECEIVER INSTALLED		NO
RECEIVER TYPE		REFLECTIVE/TRANSPARENCY
DOOR OPEN		YES
POWER ON		YES
SPECIAL FUNCTIONS		YES
SPECIAL ACTIONS	1.	It is necessary to install a RECEIVER between the CAPSTAN TRACTION ROLLER and the PINCH ROLLER; this is done to check that the PINCH holds the RECEIVER when it is closed and releases it when it is open.

[1] Enter the Diagnostics.

[2] Press and release the CANCEL or PRINT BUTTON to scroll to DIAG: PINCH TEST; the LCD will read DIAG: PINCH TEST.

[3] Press and release the SETUP/SELECT BUTTON; the LCD will read PINCH: OPEN. NOTE: The PINCH MECHANISM is in the open position.

[4] Press the CANCEL BUTTON and scroll to close; the LCD will read PINCH: CLOSE.

[5] Press the SETUP/SELECT BUTTON; the LCD will read PINCH: CLOSING until it is complete. This operates the PINCH MOTOR, PINCH CAM/SHAFT, PINCH ARMS, SPRING, and PINCH ROLLER. To check that the PINCH is closed, See Figures 159 on page 9-25, 158 on page 9-24, and 160 on page 9-25 for the location of the above parts. Use your THUMB to rotate the PINCH ROLLER. If it does not move, the PINCH is closed.

(a) This test allows the technician to check the PINCH MECHANISM and CONTROLLER PRINTED CIRCUIT BOARD.

[6] Press the PRINT BUTTON and scroll to open; the LCD will read PINCH: OPEN.

[7] Press the SETUP/SELECT BUTTON; the LCD will read PINCH: OPENING until it is complete.

[8] This operates the PINCH MOTOR, PINCH CAM SHAFT, PINCH ARMS, and PINCH ROLLER.

(a) This test allows the technician to check the PINCH MOTOR MECHANISM and CONTROLLER PRINTED CIRCUIT BOARD.

[9] Press the CANCEL BUTTON and scroll to exit; the LCD will read PINCH: EXIT.

[10] To exit the DIAG: PINCH TEST versions, when the LCD reads PINCH: EXIT, press the SETUP/SELECT BUTTON. The LCD will read DIAG: PINCH TEST.

[11] Press the CANCEL or PRINT BUTTON to scroll to the correct menu, exit the diagnostics, or continue.

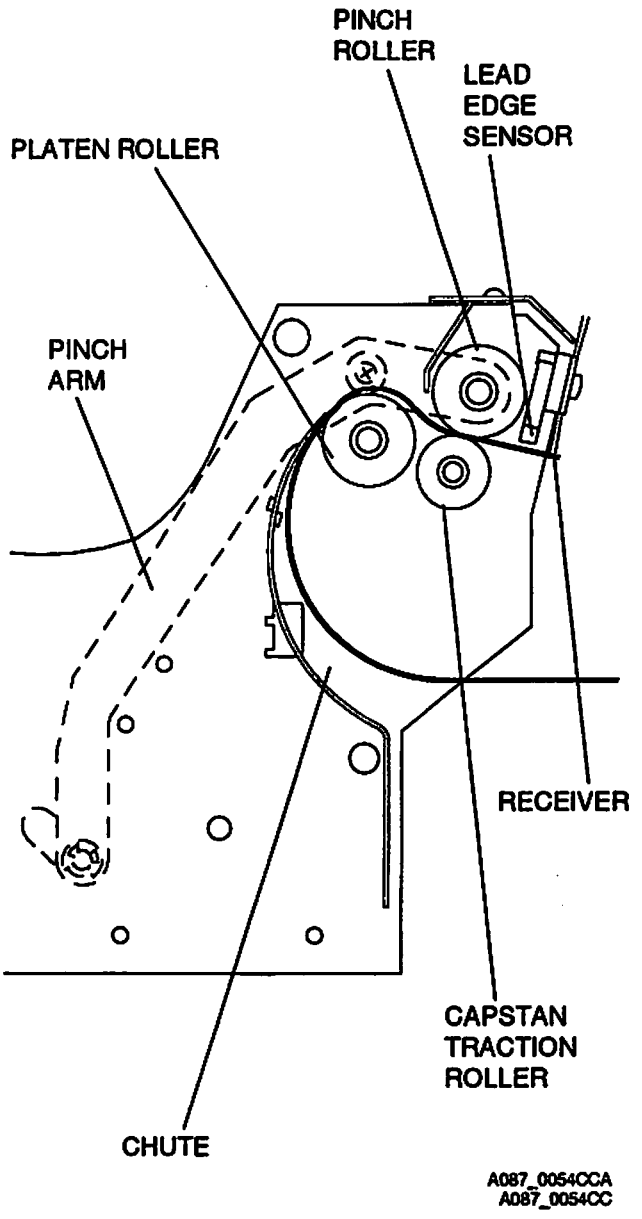

PINCH
ROLLER
LEAD
EDGE
SENSOR
PLATEN ROLLER
PINCH
ARM
RECEIVER
CAPSTAN
TRACTION
ROLLER
CHUTE
A087_0054CCA
A087_0054CC

Figure 158

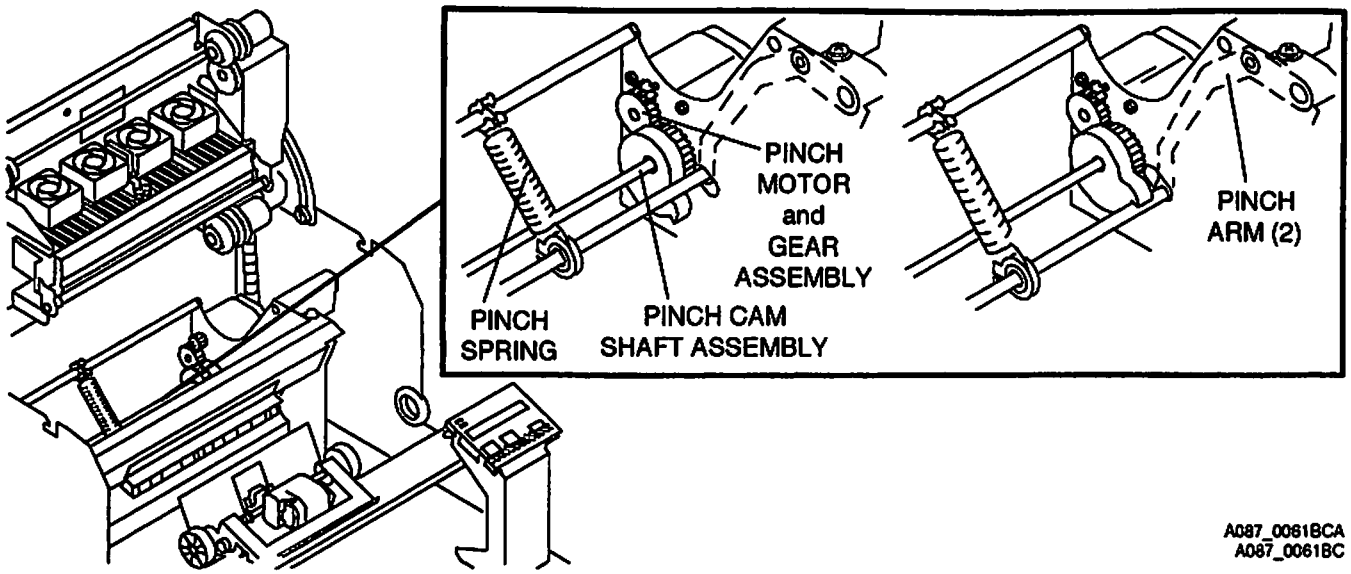


Figure 159

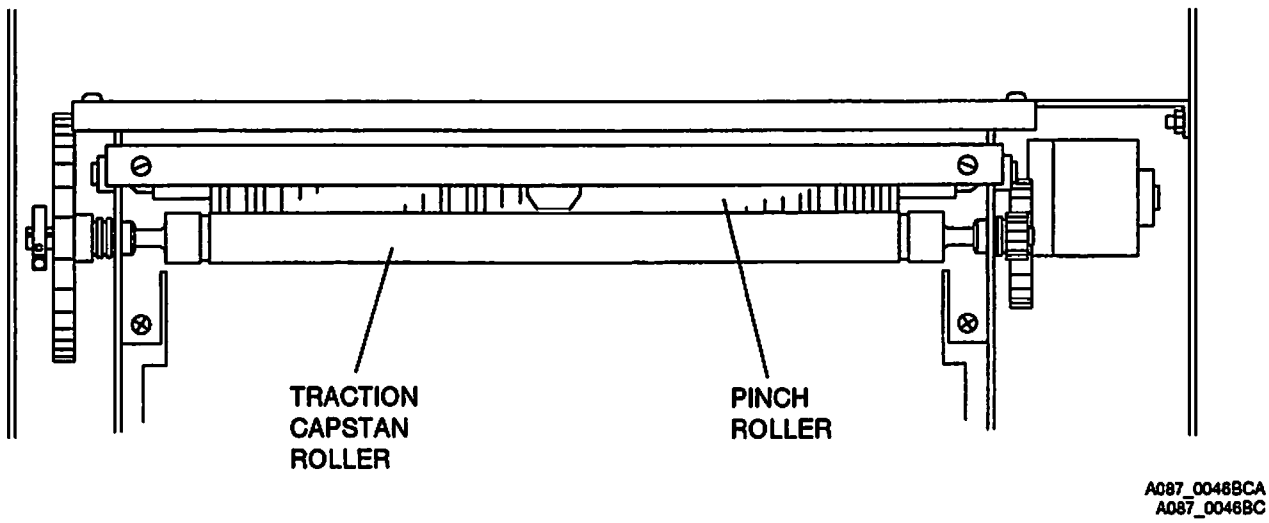


Figure 160

DIAG: STEP MOTOR

The preliminary conditions are:

TRAY INSTALLED	NO
DONOR INSTALLED	NO
RECEIVER INSTALLED	NO
RECEIVER TYPE	REFLECTIVE/TRANSPARENCY
DOOR OPEN	YES
POWER ON	YES
SPECIAL FUNCTIONS	NO
SPECIAL ACTIONS	

[1] Enter the Diagnostics.

[2] Press and release the CANCEL or PRINT BUTTON to scroll to DIAG: MOTORS; the LCD will read DIAG: MOTORS.

[3] Press and release the SETUP/SELECT BUTTON; the LCD will read STEP: FWD.

[4] Press and hold the SETUP/SELECT BUTTON; the LCD will read MOTORS: STEPPING. This operates the STEPPER MOTOR, INTERMEDIATE GEAR, and TRACTION ROLLER in the forward position. See Figures 162 on page 9-28, 161 on page 9-27, and 160 on page 9-25 to locate all of the above parts.

(a) This test allows the technician to check the STEPPER MECHANISM and CONTROLLER PRINTED CIRCUIT BOARD.

[5] Release the SETUP/SELECT BUTTON.

[6] Press the CANCEL BUTTON and scroll to reverse; the LCD will read MTRS: STEP REV.

[7] Press and hold the SETUP/SELECT BUTTON; the LCD will read MTRS: STEPPING. This operates the STEPPER MOTOR, INTERMEDIATE GEAR, and TRACTION ROLLER in the rewind position. See Figures 162 on page 9-28, 161 on page 9-27, and 160 on page 9-25 to locate all of the above parts.

[8] Press the CANCEL BUTTON and scroll to MTRS: PICK FWD.

[9] Press and hold the SETUP/SELECT BUTTON; the LCD will read MTRS: PICKING. This operates the PICKER mechanism and picks a sheet of media (paper or TRANSPARENCY).

[10] Press the CANCEL BUTTON and scroll to PICK REV:; the LCD will read MTRS: PICK REV.

[11] Press and hold the SETUP/SELECT BUTTON; the LCD will read MTRS: RETRACTING. This test retracts the PICKER mechanism.

[12] Press the CANCEL BUTTON and scroll to PLTN BRAKE; the LCD will read MTRS: PLTN BRAKE.

[13] Press and hold the SET/UP SELECT BUTTON; the LCD will read MTRS: BRAKE ON. This test checks the operation of the PLATEN BRAKE.

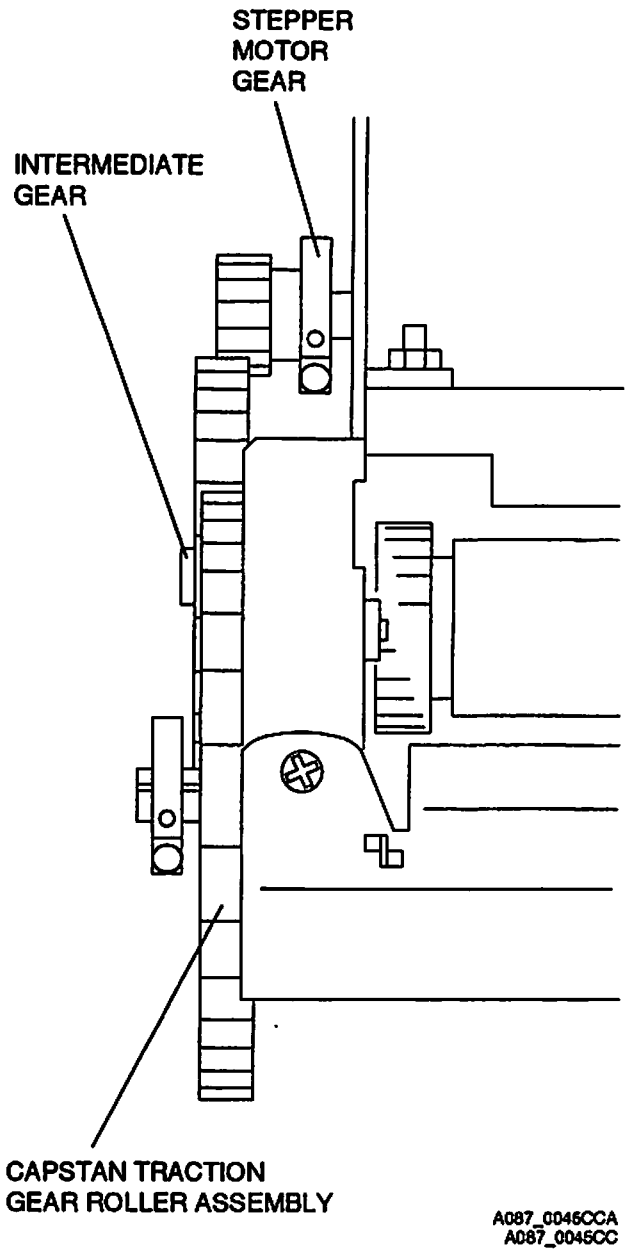

STEPPER
MOTOR
GEAR
INTERMEDIATE
GEAR
CAPSTAN TRACTION
GEAR ROLLER ASSEMBLY
A087_0045CCA
A087_0045CC

Figure 161

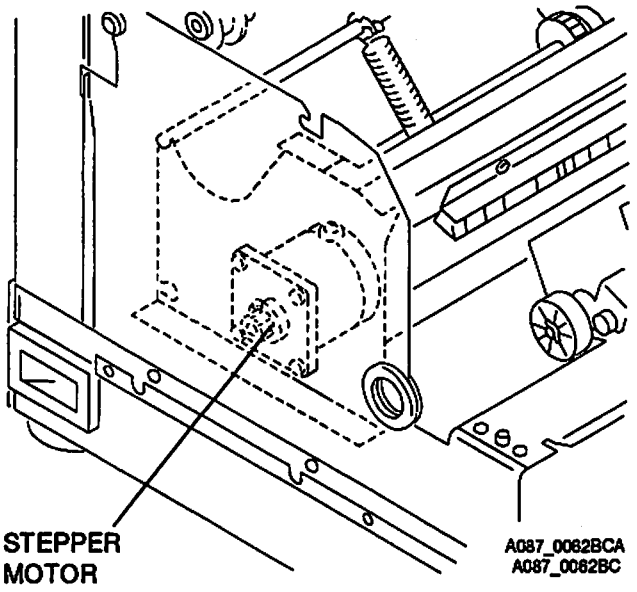


Figure 162

DIAG: OPTIONS

The preliminary conditions are:

```
TRAY INSTALLED                          NO
DONOR INSTALLED                         NO
RECEIVER INSTALLED                      NO
RECEIVER TYPE                           REFLECTIVE/TRANSPARENCY
DOOR OPEN                               YES
POWER ON                                YES
SPECIAL FUNCTIONS                       YES
SPECIAL ACTIONS    1.  These tests allow the technician to select
                       the necessary options:  RECEIVER TYPE OPTION,
                       LOOP OPTION, and the BURN IN OPTION.  The
                       RECEIVER TYPE OPTION allows you to select
                       PAPER or a TRANSPARENCY.  The LOOP OPTION
                       allows the technician to make continual
                       test prints when selected.  The BURN IN
                       OPTION is used by the manufacturer.
```

[1] Enter the Diagnostics.

[2] Press and release the CANCEL or PRINT BUTTON to scroll to [DIAG: OPTIONS]; the LCD will read [DIAG: OPTIONS].

[3] Press and release the SETUP/SELECT BUTTON; the LCD will read [OPT: RECEIVER].

[4] Press the SETUP/SELECT BUTTON; the LCD will read [RCVR OPT: PAPER] or [RCVR OPT: TRANS]. The symbol > indicates which option was selected; you can scroll between the options.

[5] After you select your option, press the SETUP/SELECT BUTTON, the symbol > will be in front to verify your option.

(a) This option is used to select either PAPER or TRANSPARENCY during the print cycle in the STAND-ALONE mode.

[6] After you select PAPER or TRANSPARENCY, press the CANCEL BUTTON and scroll to exit; the LCD will read [RCVR OPT: EXIT].

[7] Press and RELEASE the SETUP/SELECT BUTTON; the LCD will read [OPT: RECEIVER].

[8] Press the CANCEL BUTTON and scroll; the LCD will read [OPT: LOOP CYCLE TYPE].

[9] Press and release the SETUP/SELECT BUTTON

[10] Press the CANCEL or PRINT BUTTON to continue.

[11] The LCD will read:

- [CYCLE: BURN-IN]
- [CYCLE: 1-PLANE]
- [CYCLE: PCK/EJECT]
- [CYCLE: EXIT]

[12] This test allows the technician to operate a series of configurations and to test the pick and eject operation.

[13] Press the CANCEL BUTTON and scroll; the LCD will read [OPT: LOOP-ENABLE].

[14] Press and release the SETUP/SELECT BUTTON; the LCD will read [LOOP OPT: OFF] or [LOOP OPT: ON]. The symbol > indicates which option was selected. You can scroll through the options.

[15] After you determine the correct option, select the option by pressing the SETUP/SELECT BUTTON. The symbol > will be in front to verify your option.

(a) This function allows the technician to make multiple test prints when [LOOP OPT: ON] is selected by pressing the TEST PRINT BUTTON in the **READY Mode.**

[16] Press the CANCEL BUTTON and scroll to exit; the LCD will read >LOOP OPT: EXIT.

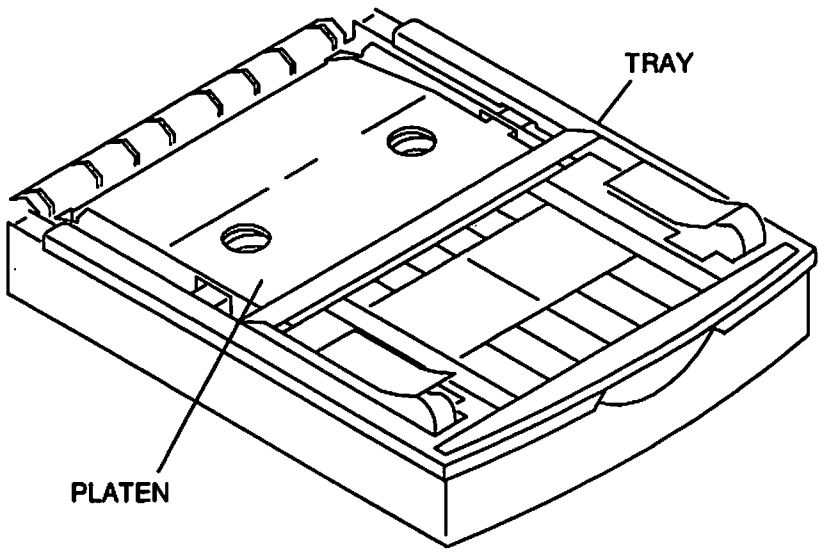
[17] Press and release the SETUP/SELECT BUTTON; the LCD will read [OPT: LOOP-ENABLE].

[18] Press the CANCEL BUTTON and scroll to [LOOP COUNT]; the LCD will read [OPT: LOOP COUNT].

[19] Press and release the SETUP/SELECT BUTTON; the LCD will read [OPT INC COUNT ###] or [OPT DEC COUNT ###]. The symbol > indicates the option selected. This operation allows the technician to increment or decrement the test counter during burn-in.

[20] Press and release the SETUP/SELECT BUTTON; the LCD will read [COUNT: EXIT].

[21] Press the CANCEL BUTTON and scroll to the next option.



A087_0041BCA
A087_0041BC

Figure 163

DIAG: CTRLR TEST

The preliminary conditions are:

TRAY INSTALLED		NO
DONOR INSTALLED		NO
RECEIVER INSTALLED		NO
RECEIVER TYPE		REFLECTIVE/TRANSPARENCY
DOOR OPEN		YES
POWER ON		YES
SPECIAL FUNCTIONS		YES
SPECIAL ACTIONS	1. These tests indicate error codes if there is a malfunction. See the error code table.	

[1] Enter the Diagnostics.

[2] Press and release the CANCEL or PRINT BUTTON to scroll to DIAG: CTRLR TEST; the LCD will read DIAG: CTRLR TEST.

[3] Press and release the SETUP/SELECT BUTTON; the LCD will read CTRLR: TEST ALL.

[4] Press and release the SETUP/SELECT BUTTON; the LCD will read CTRLR: TESTING.

[5] When the test is completed, the LCD will read CTRLR: TEST ALL.

(a) This test is used to check that the CONTROLLER tests operate correctly, allowing the technician to diagnose malfunctions in the CONTROLLER area. The versions are:

- DIAG: CTRLR TEST
  - CTRLR: TEST ALL
  - CTRLR: MATCH VERS
  - CTRLR: PROM 0
  - CTRLR: PROM 1
  - CTRLR: RAM 0
  - CTRLR: RAM 1
  - CTRLR: C EEPROM
  - CTRLR: H EEPROM
  - CTRLR: ADC
  - CTRLR: PHM
  - CTRLR: EXIT

CONTROLLER Test Option Definitions

- TEST ALL
  - Performs all the tests listed in the CONTROLLER test section.
- MATCH VERS
  - Performs a code check for U8 and U17, the PROGRAM PROMS located on the CONTROLLER PRINTED CIRCUIT BOARD.
- PROM 0 and PROM 1
  - Performs a test on U8 and U17, the PROGRAM PROMS located on the CONTROLLER PRINTED CIRCUIT BOARD.
- DSP PROM
  - Performs a check of the checksum.
- RAM 0 and RAM 1
  - Performs a memory check on the RAM located in the CONTROLLER PRINTED CIRCUIT BOARD.
- C EEPROM
  - Performs a contents check on the CONTROLLER EEPROM.
- H EEPROM
  - Performs a contents check on the EEPROMS located on the THERMAL HEAD.
- ADC (Analog-Digital Converter)
  - Performs a check on the analog-digital converter located on the CONTROLLER PRINTED CIRCUIT BOARD.
- PHM (PULSE HEAD MODULATOR)
  - Performs a check on the PULSE HEAD MODULATOR IC located in the CONTROLLER PRINTED CIRCUIT BOARD.
- DSP (Digital Signal Processor)
  - Performs a check on the DSP on the CONTROLLER PRINTED CIRCUIT BOARD - does not check the checksum.

[6] Press the CANCEL BUTTON and scroll to the SUB-MENUs. See the list of SUB-MENUs above.

[7] After you select SUB-MENU, press the SETUP/SELECT BUTTON to access a SUB-MENU test.

[8] During each SUB-MENU test, the LCD will read [CTRLR: TESTING].

(a) This allows the technician to check that the tests operate correctly.

[9] Press the CANCEL BUTTON and scroll to exit; the LCD will read [CTRLR: EXIT].

[10] Press and release the SETUP/SELECT BUTTON; the LCD will read [DIAG: CTRLR: TEST].

[11] It is now possible to scroll through the Diagnostic Main Menu by using the PRINT or CANCEL BUTTONS.

[12] To exit the diagnostics, scroll to [DIAG: EXIT].

[13] Press the SETUP/SELECT BUTTON, the LCD will read [INITIALIZING].

[14] After initialization is complete, the LCD will read [READY], [SERVICE REQ ____] (4-digit error code), or any of the user error states such as [CLOSE COVER], [CHANGE RIBBON], or [INSERT TRAY] depending on the condition of the printer.

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Description	Page
Error Codes	10-2

Table 34 Machine Generated Error Codes

Condition/Error Code	Description	See
500	No RECEIVER at LEAD EDGE SENSOR when expected	Page 13-23
501	RECEIVER stuck at LEAD EDGE SENSOR	Page 13-23
502	RECEIVER size change without removing TRAY	Page 13-17
503	Invalid TRAY size input	Page 13-17
508	N/A	N/A
510	BAR CODE LABEL not correct/BAR CODE SENSOR or FRU malfunction	Start on Page 12-11
511	BAR CODE LABEL not correct or has damage/BAR CODE SENSOR or FRU malfunction	Start on Page 12-11
600, 601, 602 603	CONTROLLER PROM or BOARD failure	Page 14-4
608, 609, 60A, 60C	THERMAL HEAD/CABLE, CONTROLLER PRINTED CIRCUIT BOARD	Page 14-5
610	LCD or CONTROLLER PRINTED CIRCUIT BOARD	Page 14-5
618, 60B	EEPROM, THERMAL HEAD	Page 14-6
700	Inboard THERMAL HEAD POSITION SENSOR #2 open	Page 15-4
701	Inboard THERMAL HEAD POSITION SENSOR #2 blocked	Page 15-4
702	Outboard THERMAL HEAD POSITION SENSOR #1 open	Page 15-4
703	Outboard THERMAL HEAD POSITION SENSOR #1 blocked	Page 15-4
708	DONOR PATCH SENSING EMITTERS not sensing DONOR	Page 12-8
709	DONOR SENSORS not stable	Page 12-8
710, 711, 712	DSP Linetime response times out	
718	CONTROLLER PRINTED CIRCUIT BOARD	Page 14-7
719	THERMAL HEAD/CABLE, CONTROLLER PRINTED CIRCUIT BOARD	Page 14-5

Table 34 Machine Generated Error Codes - Continued

Condition/Error Code	Description	See
720, 721	CONTROLLER PRINTED CIRCUIT BOARD/CABLE	Page 14-7
722 INIT ERROR	PLATFORM	Page 16-4
730	THERMAL HEAD Cooling malfunction	Page 15-5
733	THERMAL HEAD Heating malfunction	Page 15-6
738, 739	CONTROLLER, RAM	Page 14-8
740	PROGRAM PROMS or CONTROLLER PRINTED CIRCUIT BOARD	Page 14-8
741, 742	PROGRAM PROMS or CONTROLLER PRINTED CIRCUIT BOARD	Page 14-8
748, 749, 74A, 74B, 74C, 74D	PHM Failure	Page 14-8
750-756	Unexpected write from DSP	Page 14-7
757	DSP Set Verify Failure	Page 14-8
760-773, 76E, 76F, 76A, 76B, 76C, 76D	CONTROLLER PRINTED CIRCUIT BOARD	Page 14-9
800-857	General CONTROLLER PRINTED CIRCUIT BOARD	Page 14-9
900-930, 090B, 091B, 092B, 093B, 094B	DSP BLOCK, CHECKSUM	Page 14-9

Table 35 Other LCD Errors

Condition/Error Code	Description	See
Change RIBBON/Clear RIBBON jam Open COVER/Change RIBBON Change RIBBON	The DONOR does not advance due to a malfunction in sensing, the MOTOR, CONTROLLER PRINTED CIRCUIT BOARD, or there is a jam, or the printer is out of alignment.	Start on Page 12-6
Insert TRAY	The printer will not pick and/or correctly sense media or TRAYS	Pages 13-17/13-22
Check TRAY	The printer will not pick and/or correctly sense media or TRAYS.	Pages 13-16/13-17
Clear paper path	The printer will not pick and/or correctly sense media or TRAYS.	Page 13-23
Load A/A4 paper or TRANSPARENCY	The printer will not pick and/or correctly sense media or TRAYS.	Pages 13-17/13-22
Remove TRAY	The printer will not pick and/or correctly sense media or TRAYS.	Pages 13-17/13-23
DNR: TYPE > NONE This error occurs in the Diagnostic mode. The end user error code reads LOAD RIBBON XLS.	No DONOR installed, *ColorEase* DONOR installed, BAR CODE LABEL not correct, BAR CODE FRU malfunction, CONTROLLER PRINTED BOARD malfunction, BAR CODE HARNESS not connected to CONTROLLER PRINTED CIRCUIT BOARD	Start on Page 12-11
DNR: TYPE BAD > ## This error occurs in the Diagnostic mode. The end user error code reads LOAD RIBBON XLS.	DONOR type is not supported	Start on Page 12-11

Table 36 Communications Errors (Interface errors in printer/computer)

Condition/Error Code	Description	See
Parallel (Windows)	PLATFORM Communications Errors	Page 16-12
Serial	PLATFORM	Page 16-12
LocalTalk/Appletalk	PLATFORM	Page 16-12
Ethernet (Thicknet, Thinnet)	PLATFORM	Page 16-14
SCSI	PLATFORM	Page 16-15

Table 37 Observable Errors

Condition/Error Code	Description	See
POWER INDICATOR LED not illuminated	LCD POWER INDICATOR not illuminated, or printer does not operate.	Page 11-8
No Printed Image on TRANSPARENCY/RECEIVER	The printer completes the print cycle, but there is no image on the RECEIVER.	Page 11-10

Table 38 Reference Errors (Malfunctions in Power Distribution)

Condition/Error Code	Description	See
No Power to the SPARC BOARD	The printer operates in the ENGINE mode; [INIT ERROR] or [722] may be displayed on the LCD in failure history.	Page 11-11

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Description	Page
Power Distribution Safety	11-2
Power Distribution Functional Description	11-2
Power Distribution Tools	11-6
Power Distribution Specifications	11-6
Power Distribution Voltage Verification Chart	11-7
Power Distribution Preliminary Check	11-8
POWER INDICATOR LED Not Illuminated	11-8
No Printed Image	11-10
No Power to the SPARC PRINTED CIRCUIT BOARD - ERROR 722	11-11

WARNING

Dangerous Voltage in the Power Distribution Area

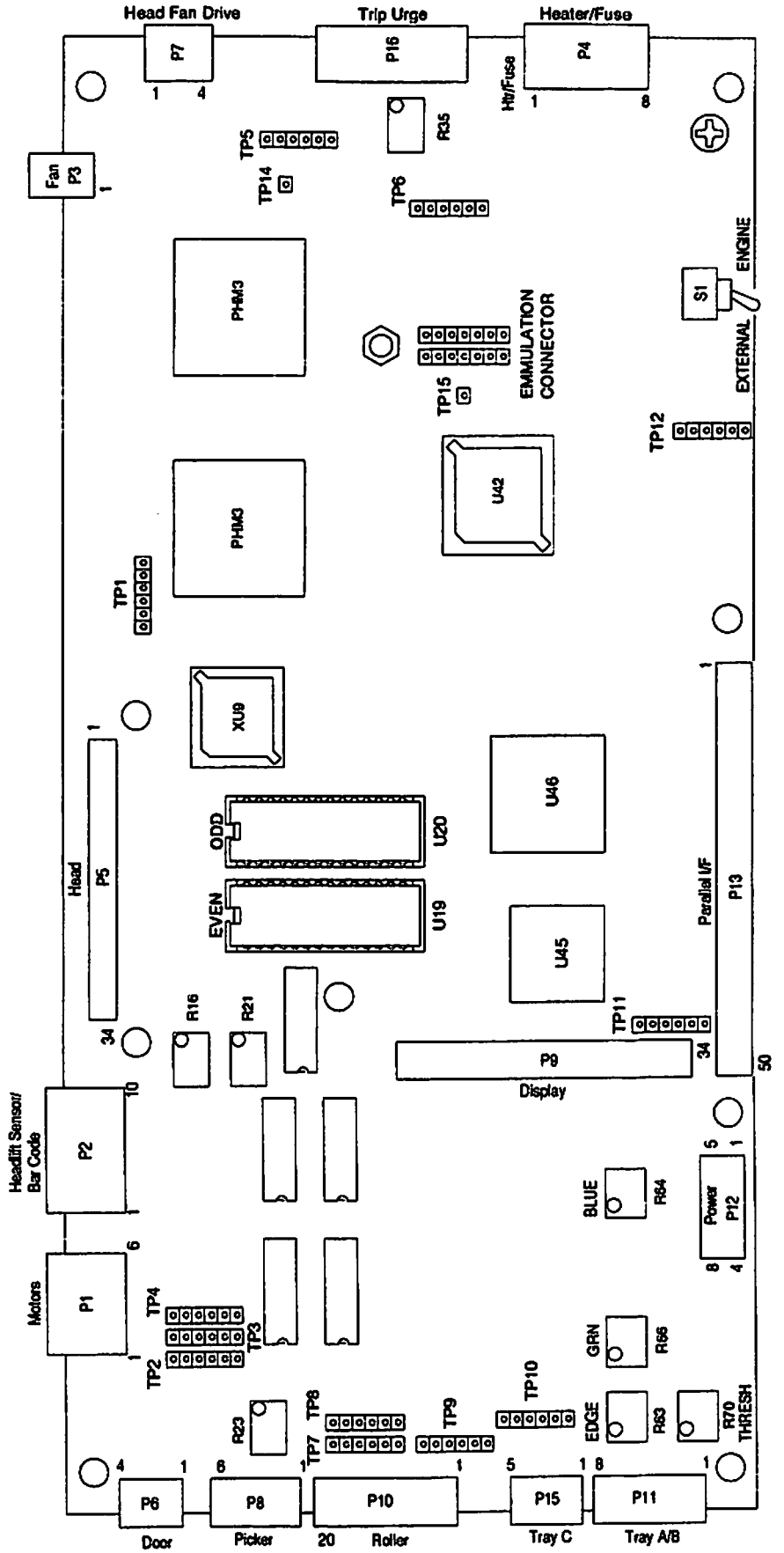
Power Distribution Functional Description

The power distribution for the printer is distributed from 2 POWER SUPPLIES, a THERMAL HEAD POWER SUPPLY and the SYSTEM POWER SUPPLY. The SYSTEM POWER SUPPLY powers the ENGINE and the PLATFORM.

The THERMAL HEAD receives power (V AC - voltage alternating current) at the TB1 CONNECTOR. A V DC (voltage direct) current is supplied from the TB2 CONNECTOR (a 16-PIN CONNECTOR) to the THERMAL HEAD. It automatically senses the V AC input, which has 2 ranges (Range 1: 90-132 V AC and Range 2: 175-264 V AC). The ac frequency input operational range is 47-63 Hz. The THERMAL HEAD voltage output range is adjustable from 11.4-15.7 V DC at R523 (the ADJUSTABLE RESISTOR).

The CONTROLLER and SPARC CIRCUIT BOARD CONNECTORS are directly connected into the POWER SUPPLY. V DC to the system is supplied through the P12 and J14 CONNECTORS and automatically senses the V AC input, which has 2 ranges (Range 1: 90-135 V AC and Range 2: 175-265 V AC). The ac frequency input operational range is 47-63 Hz. The SYSTEM POWER SUPPLY voltage output has 4 different outputs that are distributed through the TB2 CONNECTOR (a 14-PIN CONNECTOR):

- 5 V DC (5.0 minimum to 5.2 maximum)
- 12 V DC (11.8 minimum to 12.2 maximum)
- -12 V DC (-11.4 to -12.6 V DC)



A087_2004EC

Figure 164 CONTROLLER BOARD Component Locations

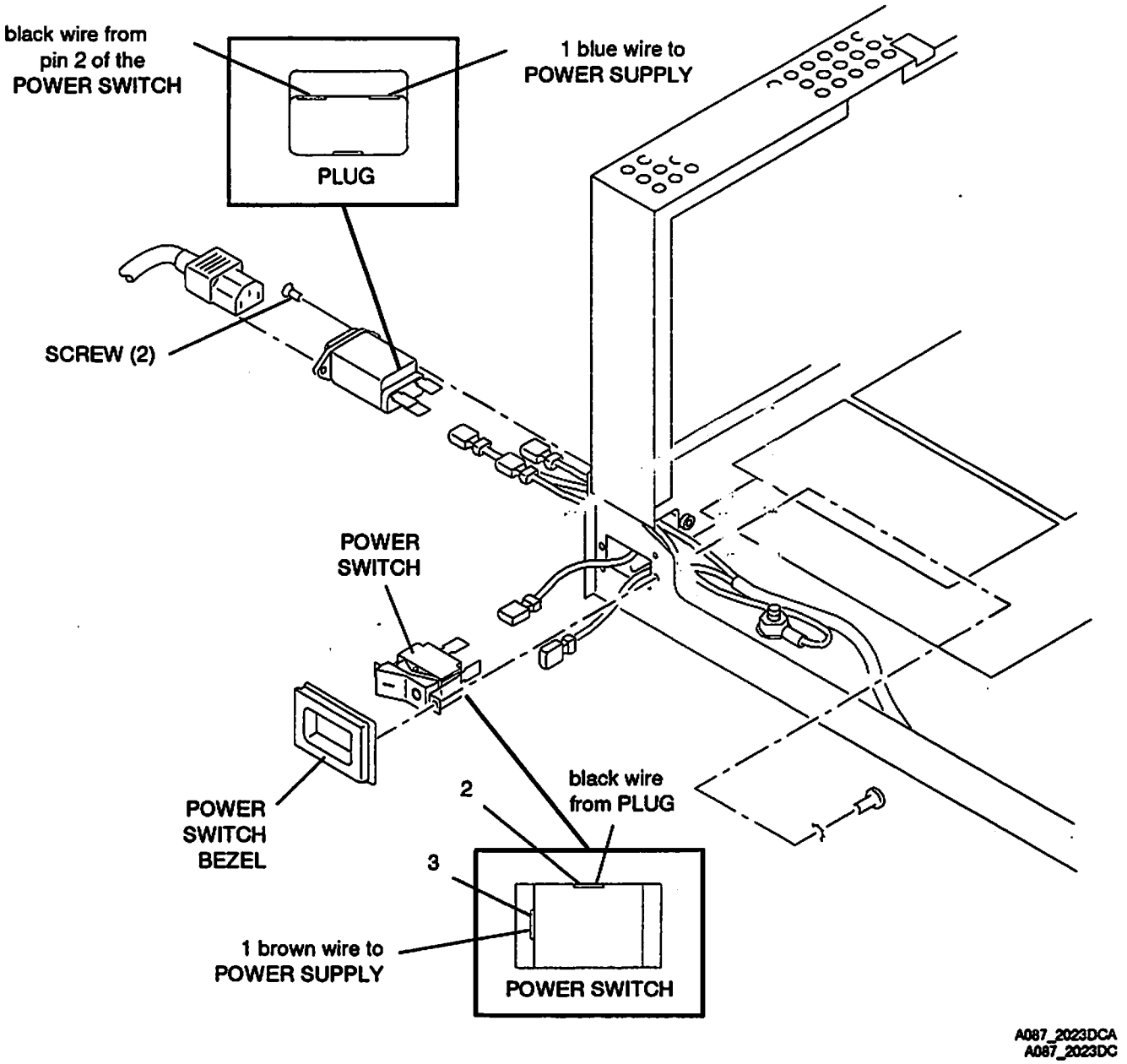


Figure 165 POWER SWITCH

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Table 39 Power Distribution Tools

Part Number	Description
TL-3190	ELECTROSTATIC DISCHARGE PORTABLE FIELD SERVICE KIT
TL-3386	DIGITAL VOLT METER, *Fluke* Manufacturing Co., #77

Power Distribution Specifications

- Voltage
  - Range 1: 90 - 132 V AC, Range 2: 175 - 265 V AC
- Watts
  - 180 W for printing
  - 107 W during THERMAL HEAD pre-heat
  - 67 W in the idle/ready modes
- Frequency
  - 47 - 63 Hz
- Ambient Temperature
  - 15 - 30 ° C (59 - 86° F)
- Ambient Humidity
  - 20 - 76% (relative humidity)
- Standard Safety
  - UL1950, CSA 1402C, TUV/VDE: IEC 950
- EMI
  - Not Available

Power Distribution Voltage Verification Chart

NOTE

PS = POWER SUPPLY

Table 40 Power Distribution Voltage Verification Chart

PRINTED CIRCUIT BOARD	CONNECTOR	PIN + and - (GND)	Voltages
CONTROLLER	P12	4, 8	+12 V DC
CONTROLLER	P12	1, 5	+5 V DC
CONTROLLER	P12	7	Power fail
CONTROLLER	P12	2, 3, 6	GND
SPARC	J14	5, 11	+12 V DC
SPARC	J14	12	4.40 V DC
SPARC	J14	1, 2, 7, 8	+5 V DC
SPARC	J14	3, 4, 9, 10	GND
SPARC	J14	6	-12 V DC
PS	J1	1-7	HEAD V (12-16.5 V DC)
PS	J1	7-14	HEAD V (GND)
PS	TB1 AC input	Blue	Neutral
PS	TB1 AC input	Brown	Hot
PLATFORM FAN	J20	NA	Red = -12 V DC Black = GND
POWER SW	NA	2, HOT	black wire, 120/240 V AC to plug
POWER SW	NA	3, HOT	brown wire, 120/240 V AC to POWER SUPPLY
PLUG	NA	NA	black wire is HOT and 120/240 V AC to SWITCH PIN 2
PLUG	NA	NA	blue wire is NEUTRAL and 120/240 V AC to POWER SUPPLY
PLUG	NA	NA	green wire is GND

Power Distribution Preliminary Check

[1] Check that the POWER CORD is correctly plugged into the printer receptacle and the power outlet.

[2] Check that the POWER SWITCH is on (I = ON).

[3] Check that the power outlet does not have a malfunction; try another outlet if necessary.

[4] Check that the POWER CORD does not have a malfunction; try another POWER CORD if necessary.

POWER INDICATOR LED Not Illuminated

The printer does not operate.

[1] Do steps 15 through 28 starting on page 11-8 first to check for DC voltage.

[2] De-energize the printer.

[3] Do steps 1, 2, and 3 of the POWER SWITCH Removal.

[4] Set the DIGITAL VOLT METER to AC voltage; the ranges are Range 1: ≈ 115 V AC, and Range 2: ≈ 250 V AC. Use Range 1 for North America and Range 2 for areas where 220 V AC is used.

[5] Energize the printer.

[6] Check that the POWER SWITCH is in the I position.

[7] Check that there is AC voltage at the back of the PLUG.

[8] Connect the red PROBE to the black wire CONNECTOR.

[9] Connect the black PROBE to the blue wire CONNECTOR.

[10] If AC voltage is present, go to the next step. If not, install a new PLUG.

[11] Check that AC voltage is present on the the POWER SWITCH CONNECTOR.

[12] Connect the red PROBE to PIN 2 of the POWER SWITCH.

[13] Connect the black PROBE to the blue wire CONNECTOR on the back of the PLUG.

[14] If voltage is present, go to PIN 3 of the POWER SWITCH. If voltage is present on PIN 3, go to the next step. If voltage is not present on PIN 2, check the wire from the PLUG and/or install a new wire. If voltage is present on PIN 2 but not on PIN 3 install a new POWER SWITCH.

[15] Set the DIGITAL VOLT METER to DC voltage.

[16] Check the output of the POWER SUPPLY.

[17] Place the PROBE in PINS 2, 3, or 6 (GND) on P12 on the CONTROLLER PRINTED CIRCUIT BOARD.

[18] Measure the outputs; the correct voltages are:

- P12: PINS 1 and 5 = 5 V DC
- P12: PINS 4 and 8 = 12 V DC
- P12: PIN 7 = ≈4.5 V DC

WARNING

Dangerous Voltage

[19] Seat CONNECTOR P12 on the CONTROLLER PRINTED CIRCUIT BOARD.

[20] Connect the black PROBE to P12 on the CONTROLLER PRINTED CIRCUIT BOARD, PIN 2, 3, or 6.

[21] Connect the red PROBE to P12, PIN 4; the DIGITAL VOLT METER should read ≈ 12 V DC.

[22] Connect the red PROBE to P12, PIN 8; the DIGITAL VOLT METER should read ≈ 12 V DC.

[23] Connect the red PROBE to P12, PIN 1 and then PIN 5; the DIGITAL VOLT METER should read ≈ 5 V DC on both PINS.

[24] If the voltages are present, go to step 26 of this procedure.

[25] If any of the voltages are not present, install a new 5/12 V DC POWER SUPPLY.

[26] If the LEDS on the CONTROLLER PRINTED CIRCUIT BOARD are illuminated and the printer does not operate, install a new CONTROLLER PRINTED CIRCUIT BOARD.

[27] If the 5 and 12 V DC LEDS are not illuminated, install a new CONTROLLER PRINTED CIRCUIT BOARD.

[28] If the printer operates correctly and the LED is illuminated, the procedure is complete.

No Printed Image

The printer completes the print cycle, but there is no image on the completed print.

[1] Do the Preliminary Check on page 11-8.

[2] De-energize the printer.

[3] Seat CONNECTOR J1 on the POWER SUPPLY.

[4] Seat the CONNECTORS on the THERMAL HEAD.

[5] Do steps 1, 2 and 3 of the POWER SWITCH Removal

[6] Set the DIGITAL VOLT METER to AC voltage; the correct range is Range 1: ≈ 115 V AC, and Range 2: ≈ 250 V AC. Use Range 1 for North America and Range 2 for areas where 220 V AC is used.

[7] Energize the printer.

[8] Check that the POWER SWITCH is in the I position.

[9] Check that there is AC voltage at the back of the PLUG.

[10] Connect the red PROBE to the black wire CONNECTOR.

[11] Connect the black PROBE to the blue wire CONNECTOR.

[12] If there is AC voltage, go to the next step. If not, install a new PLUG.

[13] Check that there is AC voltage present at the POWER SWITCH CONNECTORS.

[14] Connect the red PROBE to PIN 2 of the POWER SWITCH.

[15] Connect the black PROBE to the blue wire CONNECTOR on the back of the PLUG.

[16] If voltage is present, go to PIN 3 of the POWER SWITCH. If voltage is present on PIN 3, go to the next step. If voltage is not present on PIN 2, check the wire from the PLUG and/or install a new PLUG. If voltage is present on PIN 2 but not not PIN 3, install a new POWER SWITCH.

[17] Check that there is DC output from the J1 CONNECTOR on the POWER SUPPLY.

[18] Set the DIGITAL VOLT METER to DC (range is ≈ 11-16 V DC).

[19] Connect the red PROBE to J1, PINS 1 - 7 (red wires).

[20] Connect the black PROBE to J1, PINS 8 - 14; the DIGITAL VOLT METER should read 12 - 16.5 V DC on PINS 1 - 7 (black wires).

[21] If voltage is not present on PINS 1 - 7, install a new POWER SUPPLY.

[22] If voltage is present, go to the next step.

[23] De-energize the printer.

[24] Check the continuity from the HARNESS from J1 to the THERMAL HEAD.

[25] If continuity is present, install a new THERMAL HEAD HEAT SINK ASSEMBLY.

[26] If continuity is not present, install a new HARNESS.

No Power to the SPARC BOARD - ERROR 722

The printer operates in the ENGINE mode.

[1] De-energize the printer.

[2] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY Access procedure on page 7-25.

[3] Set the DIGITAL VOLT METER to DC voltage.

[4] Energize the printer.

[5] Check the voltage at the 12-PIN CONNECTOR on the SPARC BOARD.

[6] Connect the black PROBE to PINS 3, 4, 9 and 10 on the SPARC BOARD.

[7] Connect the red PROBE to PINS 1, 2, 7, and 8; the DIGITAL VOLT METER should read ≈ +5 V DC.

[8] Connect the red PROBE to PINS 5 and 11; the DIGITAL VOLT METER should read ≈ +12 V DC.

[9] Connect the red PROBE to PIN 6; the DIGITAL VOLT METER should read ≈ -12 V DC.

[10] Connect the red probe to PIN 6; the DIGITAL VOLT METER should read ≈ 5 V DC.

[11] If any of the voltages are not present, install a new 5 and 12 V DC POWER SUPPLY.

[12] If there is voltage present, go to Error Code 722 in the Error Codes Section.

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DONOR Transport and Sensing System Specifications	12-4
DONOR Transport and Sensing System Voltage Verification Charts	12-5
DONOR Transport and Sensing System Preliminary Check	12-6
Change DONOR/Clear DONOR jam	12-6
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DONOR PATCH SENSING EMITTERS	12-8
DONOR PATCH Sensing (Detectors)	12-9
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DONOR Transport and Sensing System Safety

The DONOR Transport and Sensing System is a low voltage area.

DONOR Transport and Sensing System Functional Description

The DONOR Transport and Sensing System is divided into 2 systems that are interdependent on each other. One part of the system mechanically advances and rewinds the DONOR and adjusts tension. The other part of the system detects the DONOR PATCH. The second part of the system detects DONOR type. This part of the system is used to inform the CONTROLLER which patch (yellow, magenta, or cyan) is being sensed by the DONOR EMITTERS or SENSORS. It also detects what type of DONOR is installed as sensed by the BAR CODE reader.

The DONOR Transport System includes the SUPPLY BRACKET (SUPPLY SPINDLES, CLUTCH, ONE-WAY INSERTION BRACKET) and the TAKE-UP SYSTEM which is integrated into the DOOR ASSEMBLY (TAKE-UP SPINDLES and CLUTCH). The TAKE-UP and SUPPLY MOTORS are uni-directional. The SUPPLY MOTOR operates at ≈ - 10.54 V DC while advancing, ≈ 10.44 V DC during rewind, and ≈ 10.42 V DC during tension adjustment.

The TAKE-UP MOTOR operates at ≈ - 10.3 V DC while advancing, ≈ 3.85 V DC during rewind, and at 0 V DC while adjusting tension. The DONOR Transport System not only advances, rewinds, and adjusts tension on the DONOR patches; it also moves the RECEIVER into the correct position at the beginning of the print cycle.

The DONOR PATCH Sensing System includes the DONOR EMITTERS (BLUE and GREEN LEDs), and the DONOR SENSORS. The DONOR EMITTERS are mounted to the FAN BRACKET, the DONOR SENSORS are mounted to the ROLLER ASSEMBLY. With DONOR installed and the DOOR closed, the DONOR SENSORS are correctly aligned. The DONOR SENSORS are used to detect the correct patch/color (cyan, magenta, yellow, and laminate) and metering the DONOR. The BLUE and GREEN SENSORS can be adjusted to the correct range. The DONOR SENSORS sense DONOR movement during the print cycle and check that the correct color patch is printed at the correct time.

The DONOR type BAR CODE sensing system is attached to the DONOR SUPPLY BRACKET and includes a BAR CODE SENSOR. The DONOR type is determined by reading the BAR CODE LABEL on the DONOR SUPPLY SPOOL. The software can read the LABEL in the rewind and advance modes. A 2-of-8 BAR CODE is used.

The DONOR type BAR CODE will read when a new DONOR SUPPLY SPOOL is installed. Since the ENGINE does not contain SENSORS that detect the DONOR SUPPLY SPOOL, the DONOR BAR CODE is read when the printer is energized and when the DOOR is closed. This checks that the DONOR type is known after the end-user has installed a new DONOR SUPPLY SPOOL.

If a malfunction occurs during a read, a valid 2-of-8 code is not read or the DONOR type code read is invalid. The LCD displays a message indicating to load the correct type of DONOR.

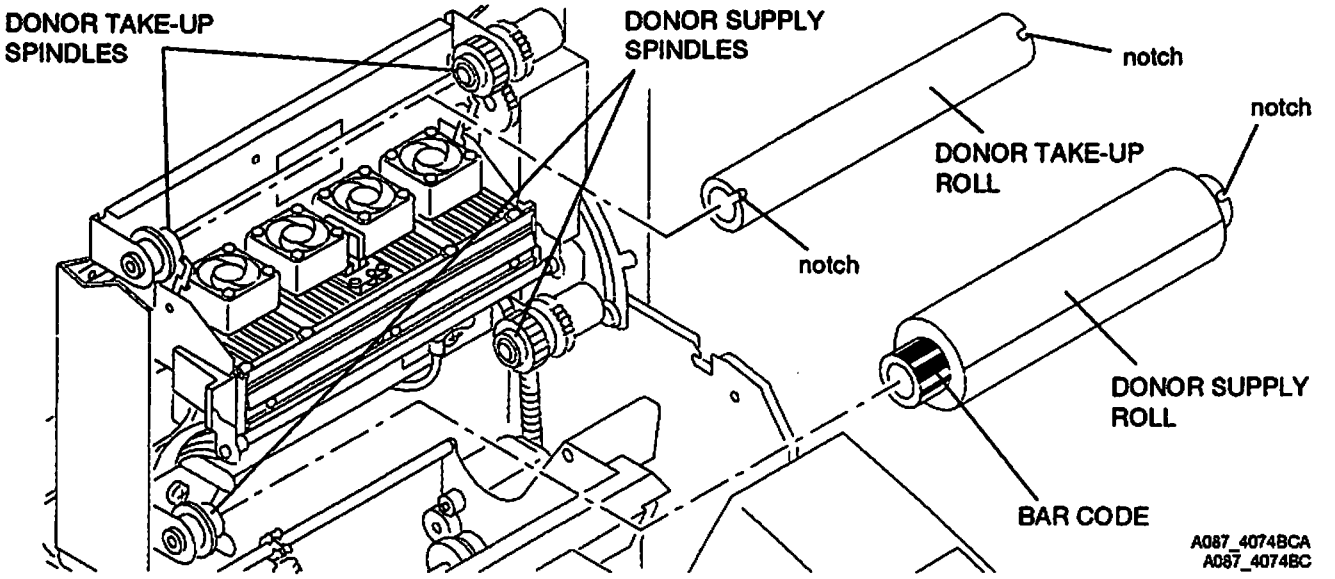
DONOR TAKE-UP SPINDLES
DONOR SUPPLY SPINDLES
notch
notch
DONOR TAKE-UP ROLL
notch
DONOR SUPPLY ROLL
BAR CODE
A087_4074BCA
A087_4074BC

Figure 167

Table 41 DONOR Transport and Sensing System Tools

Part Number	Description
TL-3190	ELECTROSTATIC DISCHARGE PORTABLE FIELD SERVICE KIT
TL-3386	DIGITAL VOLT METER, *Fluke* Manufacturing Co., #77

DONOR Transport and Sensing System Specifications

- Voltages
  - TAKE-UP, SUPPLY, MOTOR: ≈ 3-11 V DC
  - BLUE DONOR SENSOR: 3.9 ≈ ± .05 V DC
  - GREEN DONOR SENSOR: 3.9 ≈ ± .05 V DC

Table 42 DONOR Transport and Sensing System Voltage Verification Chart - CONTROLLER PRINTED CIRCUIT BOARD while in Diagnostic Donor Test

CONTROLLER PRINTED CIRCUIT BOARD CONNECTOR	PIN	Voltage
SUPPLY MOTOR TP3 (-)	6	≈ - 10.8 V DC advance, ≈ 10.7 V DC rewind, ≈ 10.7 V DC take slack
SUPPLY MOTOR TP3 (+)	5	
TAKE-UP MOTOR TP3 (-)	3	≈- 10.6 V DC advance, ≈ 4.5 V DC rewind, 0 V DC take slack
TAKE-UP MOTOR TP3 (+)	4	
CONTROLLER PCB - P2	9*	≈12 V DC
CONTROLLER PCB - P2	10*	≈12 V DC
CONTROLLER PCB - P2	3	GND
GREEN DONOR SENSOR, TP8 (-)	5*	See Table 43 on page 12-5.
BLUE DONOR SENSOR, TP8 (+)	6*	See Table 43 on page 12-5.

* Use TP11-5 for GND.

Table 43 DONOR Sensing Truth Table

DONOR Color	BLUE LED, TP8-6	GREEN LED, TP8-5
YEL	H ≈ 3.15 V DC	L ≈ .18 V DC
MAG/BLK	H ≈4.55 V DC	H ≈ 4.21 V DC
CYN	H ≈.31 V DC	H ≈ 4.26 V DC
LAM	H ≈.25 V DC	H < .25 V DC

H = Logic high of 1
L = Logic low of 0

Table 44 DONOR Transport and Sensing System Voltage Verification Chart FAN BRACKET PRINTED CIRCUIT BOARD - 3-PIN CONNECTOR

Wire	Voltage
black	GND
yellow	≈ 12 V DC
red	≈ 12 V DC

DONOR Transport and Sensing System Preliminary Check

[1] De-energize the printer.

[2] Check that DONOR is installed correctly; the BAR CODE LABEL should be on the right side of the DONOR SUPPLY SPOOL. Check for damage on the DONOR BAR CODE LABEL.

[3] Check that the DONOR SUPPLY SPOOL is not empty.

[4] Check that the 5 and 12 V DC LED is illuminated on the CONTROLLER PRINTED CIRCUIT BOARD.

[5] Check that the GREEN and BLUE DONOR EMITTERS are illuminated on the FAN BRACKET ASSEMBLY.

[6] Close the DOOR.

Change DONOR/Clear DONOR jam

[1] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY Access procedure on page 7-25.

[2] Energize the printer.

[3] Check that DONOR is installed correctly; the BAR CODE LABEL should be on the right side of the DONOR SUPPLY SPOOL. Check for damage on the DONOR BAR CODE LABEL. Check that the DONOR SUPPLY SPOOL is not empty.

DONOR Transport

[1] Access the Diagnostic DIAG: DONOR TEST.

[2] Do the take slack, advance, and rewind tests.

[3] Check that the DONOR rewinds, advances, and has the correct tension.

[4] Check the MOTOR voltages; set the DIGITAL VOLT METER to DC voltage.

[5] Connect the black PROBE to TP3, PIN 6 and the red PROBE to TP3 PIN 5 (SUPPLY MOTOR); the DIGITAL VOLT METER will read

- ≈ - 10.8 V DC in advance
- ≈ 10.7 V DC in rewind
- ≈ 10.7 V DC while in take slack

[6] Connect the black PROBE to TP3, PIN 3. Connect the red PROBE to TP3, PIN 4. The DIGITAL VOLT METER should read as listed below. If the voltages are present, go to the next step. If all of the voltages are not present, install a new CONTROLLER PRINTED CIRCUIT BOARD.

- ≈ - 10.6 V DC in advance
- ≈ 4.5 V DC in rewind
- ≈ 0 V DC while in take slack

[7] Check for continuity; disconnect P1:

Table 45 DONOR Transport and Sensing System Continuity Check

CONNECTOR P1	PINS	Ω
TAKE-UP MOTOR	3, 4	≈ 25.0 ± 5 Ω
SUPPLY MOTOR	5, 6	≈ 29.1 ± 5 Ω

[8] If the resistances are not all present, install a new MOTOR BRACKET ASSEMBLY.

[9] If the resistances are present, install a new CONTROLLER PRINTED CIRCUIT BOARD.

DONOR PATCH SENSING EMITTERS

[1] Check if the BLUE and GREEN DONOR EMITTERS are illuminated.

[2] If the DONOR EMITTERS are not illuminated, check for the 12 V DC on the FAN PRINTED CIRCUIT BOARD ASSEMBLY, P2 CONNECTOR (red, yellow and black wires).

[3] Set the DIGITAL VOLT METER to + DC VOLTAGE.

[4] Connect the red (+) PROBE to the FAN PRINTED CIRCUIT BOARD CONNECTOR red wire, then the yellow wire.

[5] Connect the black (-) PROBE to the FAN PRINTED CIRCUIT BOARD CONNECTOR black wire.

(a) If the voltage (+ 12 V DC) is present, install a new FAN BRACKET ASSEMBLY.

(b) If the voltage is not present, go to the next step.

[6] Check the continuity of the EMITTER CABLE; disconnect P7 on the CONTROLLER BOARD and the 3-PIN CONNECTOR on the FAN BRACKET.

Table 46 DONOR Transport and Sensing System Continuity Check

CONTROLLER PRINTED CIRCUIT BOARD CONNECTOR	PIN	FAN PRINTED CIRCUIT BOARD CONNECTOR (3-PIN)	Resistance
P7	3 to	black wire	≈ 0 ± 1 Ω
P7	1 to	red wire	≈ 0 ± 1 Ω
P7	2 to	yellow wire	≈ 0 ± 1 Ω

[7] If continuity is present, go to the next step. If continuity is not present, install a new EMITTER/FAN BRACKET HARNESS.

[8] Connect P7 and the 3-PIN CONNECTOR on the FAN BRACKET ASSEMBLY.

[9] Check the voltage at P7 on the CONTROLLER PRINTED CIRCUIT BOARD.

[10] Set the DIGITAL VOLT METER to DC voltage.

[11] Connect the red PROBE to P7 and PIN 1, then PIN 2 on the CONTROLLER PRINTED CIRCUIT BOARD.

[12] Connect the black PROBE to any GROUND; the DIGITAL VOLT METER should read 12 V DC (TP10-PIN 6).

[13] If 12 V DC is not present at P7 PIN 1, install a new CONTROLLER PRINTED CIRCUIT BOARD.

DONOR PATCH Sensing (Detectors)

IMPORTANT

Do the DONOR adjustments before doing this test.

[1] Check that DONOR is installed and that the BARCODE LABEL is present and not damaged on the DONOR SUPPLY BRACKET.

[2] Check that the EMITTER BOARD (FAN BRACKET PRINTED CIRCUIT BOARD) is mounted correctly and that the BLUE/GREEN EMITTERS are illuminated.

[3] Set the DIGITAL VOLT METER to DC voltage.

[4] Connect the red PROBE to TP8, PIN 5 (GREEN LED) on the CONTROLLER PRINTED CIRCUIT BOARD.

[5] Connect the black PROBE to TP11, PIN 5 (GROUND).

[6] Access the Diagnostic test [DIAG: DONOR TEST].

[7] Close the DOOR.

[8] Advance the DONOR; the LCD DISPLAY should read as follows as the DONOR advances:

- DNR: COLOR = YEL
- DNR: COLOR = MAG/BLK
- DNR: COLOR = CYN
- DNR: COLOR = LAM

[9] As the DONOR advances in the Diagnostics, the DIGITAL VOLT METER should read as in the table below for TP8, PIN 5.

[10] Connect the red (+) PROBE to TP8, PIN 6 (BLUE LED).

[11] Advance the DONOR; the DVM should read as in the table below for TP8, PIN 6.

Table 47 CONTROLLER PRINTED CIRCUIT BOARD DONOR Voltages

COLOR	TP	PIN	Undepleted V
YEL	8	5 GREEN	<.25
MAG/BLK	8	5 GREEN	>2.0
CYN	8	5 GREEN	>2.0
YEL	8	6 BLUE	>2.0
MAG/BLK	8	6 BLUE	>2.0
CYN	8	6 BLUE	<.5
LAM (CLEAR)	8	5 GREEN	<.25
LAM (CLEAR)	8	6 BLUE	<.25

Table 48 Undepleted DONOR Thresholds

COLOR	Threshold
CYAN	Both readings should be > 1.5 V DC
MAGENTA	TP8, PIN 6 should be < 1.5 V DC, TP8, PIN 5 should be above 1.5 V DC
YELLOW	Both test points should be safely < 1.5 V DC

[12] If the voltages are close to the threshold, the alignment is most likely not correct. Install a new FAN BRACKET ASSEMBLY. If the voltages do not change, the DONOR DETECTOR may have a malfunction. Install a new ROLLER ASSEMBLY.

[13] If all the voltages are correct, the CONTROLLER PRINTED CIRCUIT BOARD could have a malfunction; install a new CONTROLLER PRINTED CIRCUIT BOARD.

DONOR Type BAR CODE Sensing

IMPORTANT

Do the BAR CODE SENSOR Adjustment on page 8-12 before doing these tests.

Table 49 DONOR Type Code Not Detected

Normal Mode - OCP Read	DONOR TEST Diagnostic Mode Read	Description
LOAD RIBBON	DNR: TYPE>NONE	The DONOR type code is not detected. The BAR CODE SENSOR did not detect any BARS. This could indicate the following malfunctions: • No DONOR installed • BAR CODE SENSOR not in correct alignment • BAR CODE READ FRU malfunction • BAR CODE LABEL missing • BAR CODE LABEL not aligned correctly • BAR CODE FRU not connected • CONTROLLER PRINTED CIRCUIT BOARD malfunction

DONOR Type Code Not Detected - Procedure

[1] Check that the DONOR is installed. If not, install the correct DONOR and test the printer.

[2] Check that the BAR CODE LABEL is installed on the DONOR SUPPLY SPOOL. If the BAR CODE LABEL is installed, go to the next step. If the BAR CODE LABEL is not installed, install new DONOR.

[3] Check that the BAR CODE LABEL is parallel with the end of the DONOR SUPPLY SPOOL. If not, install new DONOR with a BAR CODE LABEL then go to the next step. If the BAR CODE LABEL is in the correct location, go to the next step.

[4] Check that the BAR CODE SENSOR is not loose and is correctly aligned with the BAR CODE LABEL on the DONOR SUPPLY SPOOL. If the BAR CODE SENSOR is not correctly aligned, install a new DONOR SUPPLY BRACKET and test again. If it is correct, go to the next step.

[5] Check that the BAR CODE SENSOR CABLE is connected to the CONTROLLER PRINTED CIRCUIT BOARD. If it is not connected, seat the CABLE CONNECTOR and test the printer. If it is connected, go to the next step.

[6] Set the DVM to DC voltage.

[7] Connect the red PROBE to TP4, PIN 3 and the black PROBE to TP 4, PIN 6 on the CONTROLLER PRINTED CIRCUIT BOARD.

IMPORTANT

Do the BAR CODE SENSOR adjustment on page 8-12 first.

[8] With the DONOR installed, rotate the DONOR SUPPLY SPOOL.

[9] The voltage should read ≥ 4.7 V DC on the wide black patch and ≤ .25 V DC on the white patch. If the voltage is within specification, install a new CONTROLLER PRINTED CIRCUIT BOARD. If the voltage is not within specification, install a new DONOR SUPPLY BRACKET ASSEMBLY.

IMPORTANT

See the table on page 4-11 for the DONOR supported.

Table 50 DONOR Type Not Supported

Normal Mode - OCP Read	DONOR TEST Diagnostic Mode Read	Description
LOAD RIBBON DONOR	DNR: TYPE_BAD>##	The DONOR type is not supported. A valid 2-of-8 BAR CODE was read but the type of DONOR is not supported by the printer.

IMPORTANT

See the table on page 4-11 for the DONOR supported.

DONOR Type Not Supported - Procedure

(1) Verify in DNR: READ TYPE that a DNR: TYPE_OK->## is displayed. If a DNR: TYPE_BAD>## is displayed, it means that ## is not useable.

Table 51 DONOR Type BAR CODE Read Incomplete

Normal Mode - OCP Read	DONOR TEST Diagnostic Mode Read	Description
SR#0510	DNR: SR#0510	The DONOR type BAR CODE read is incomplete. The BAR CODE SENSOR sensed at least 1 BAR but not the number of BARS necessary for a valid code. This may indicate the following malfunctions: • DONOR SUPPLY SPOOL moves too slow • BAR CODE SENSOR not in correct alignment • BAR CODE LABEL not correctly aligned • BAR CODE READ FRU malfunction • BAR CODE SENSOR not operating for TYPE: NONE.

DONOR Type BAR CODE Read Incomplete - Procedure

(1) Check that DONOR SUPPLY SPOOL rotates correctly and at normal speed in the [DNR: ADVANCE] and [DNR: REWIND] modes.

(2) Check that the BAR CODE SENSOR is not loose and is correctly aligned with the BAR CODE LABEL on the DONOR SUPPLY SPOOL. If the BAR CODE SENSOR is not correctly aligned, install a new DONOR SUPPLY BRACKET. If it is correct, go to the next step.

(3) Check that the BAR CODE SENSOR CABLE is connected to P2 on the CONTROLLER PRINTED CIRCUIT BOARD. If it is not connected, seat the CABLE CONNECTOR and test the printer. If it is connected, go to the next step.

(4) Do the BAR CODE SENSOR PRINTED CIRCUIT BOARD Adjustment procedure on page 8-12.

(5) If the BAR CODE SENSOR adjustments cannot be set to specification, install a new DONOR SUPPLY BRACKET.

(6) If all of the BAR CODE SENSOR adjustments are to specification, and the printer still does not operate, install a new CONTROLLER PRINTED CIRCUIT BOARD.

Table 52 DONOR Type BAR CODE Not 2-of-8 Code

Normal Mode - OCP Read	DONOR TEST Diagnostic Mode Read	Description
SR#0511	[DNR: SR# 0511]	The DONOR type BAR CODE read is not a 2-of-8 code. The number of BARS necessary for a valid DONOR type BAR CODE was sensed. When the BARS were decoded, the resulting code was not a valid 2-of-8 code. This may indicate the following malfunctions: • BAR CODE LABEL not correct • BAR CODE LABEL has damage • DONOR SUPPLY SPOOL speed is erratic • BAR CODE SENSOR not in correct alignment • BAR CODE LABEL not aligned correctly • BAR CODE READ FRU malfunction

DONOR Type BAR CODE Not 2-of-8 Code - Procedure

(1) Check that the BAR CODE LABEL is installed on the DONOR SUPPLY SPOOL. If the BAR CODE LABEL is installed, go to the next step. If the BAR CODE LABEL is not installed, install new DONOR.

(2) Check that the BAR CODE LABEL is parallel with the end of the DONOR SUPPLY SPOOL. If not, install new DONOR. If the BAR CODE LABEL is in the correct location, go to the next step.

(3) Check the BAR CODE LABEL for damage. If the BAR CODE LABEL has damage, install a new XLS 8300 DONOR ROLL. If the BAR CODE LABEL is good, go to the next step.

(4) Check that the BAR CODE SENSOR is not loose and is correctly aligned with the BAR CODE LABEL on the DONOR SUPPLY SPOOL. If the BAR CODE SENSOR is not correctly aligned, install a new DONOR SUPPLY BRACKET. If it is correct, go to the next step.

(5) Check that the [DNR: ADVANCE] and [DNR: REWIND] modes operate correctly.

(6) If an error occurs, (such as SR 510), check that the DONOR does not cause a bind due to the THERMAL HEAD gap malfunction in the LOAD position. Check for MOTOR BRACKET damage. If there is no bind in the DONOR, go to the next step.

(7) Install the DONOR SUPPLY BRACKET ASSEMBLY and test the printer.

(8) If the printer still does not operate correctly, install a new CONTROLLER PRINTED CIRCUIT BOARD and/or CABLE from the DONOR SUPPLY BRACKET ASSEMBLY to the CONTROLLER PRINTED CIRCUIT BOARD.

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Picking Safety

Picking is a low voltage area.

Picking Functional Description

Picking occurs when the RECEIVER (paper/reflective or TRANSPARENCY) is moved into the ROLLER MECHANISM. This procedure uses the PAPER TRAY, TRAY TYPE SENSORS, RECEIVER TYPE SENSORS (paper/reflective or TRANSPARENCY), and the PICKER MECHANISM. See the Sequence of Operation starting on page 6-1 for a description of picking. Some actions must be completed before the picking cycle begins to start the print cycle. A TRAY must be detected - A, A4, or LW; the media selection must match the media installed, and the CONTROLLER PRINTED CIRCUIT BOARD must detect both states.

After the conditions above occur, the printer begins the print cycle. Then the PICKING MECHANISM will turn on and move the RECEIVER into the ROLLER MECHANISM. If the RECEIVER does not move to the ROLLER MECHANISM in the correct time, the printer will "time out". This could be caused if a RECEIVER is not installed, the TRAY or PICKER MECHANISM has a malfunction, the environmental condition is not within specification, or there is a paper jam in the PAPER CHUTE or NIP area of the ROLLER MECHANISM.

Picking Tools

Table 53 Picking Tools

Part Number	Description
TL-3190	ELECTROSTATIC DISCHARGE PORTABLE FIELD SERVICE KIT
TL-3386	DIGITAL VOLT METER, *Fluke* Manufacturing Co., #77

Picking Specifications

Table 54 PICKER MOTOR Voltages (Use TP2, PIN 5 for GROUND/- PIN)

CONNECTOR	PIN	Operating PICKER MOTOR Voltage
TP2 (+)	4	≈ 10.5 V DC

Table 55 TRAY Voltage Verification Chart

TP	A	A long	8 1/2 x 14 in.	9 1/2 by 14 in.	A4	A4 long	A4 x 14 in.
2	>1.5 V DC	<1.5 V DC	> 1.5 V DC	>1.5 V DC	>1.5 V DC	<1.5 V DC	<1.5 V DC
3	>1.5 V DC	>1.5 V DC	< 1.5 V DC	>1.5 V DC	<1.5 V DC	<1.5 V DC	>1.5 V DC
4	<1.5 V DC	<1.5 V DC	< 1.5 V DC	>1.5 V DC	>1.5 V DC	>1.5 V DC	>1.5 V DC

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Table 56 STEPPER MOTOR Phase Voltage

Phase	Voltage
All 4 phases	≈10.8 1 V AC in Diagnostics

Table 57 PLATEN BRAKE (Use TP4, PIN 6 for GROUND/- PIN)

CONN	PIN	Picking/Ejecting V	Printing/Ready V
TP9 (+)	5	< 1 V DC	pi type='approxeq'> -10.89 V DC in Diagnostics
TP9 (-)	6	<	

Table 58 PINCH ROLLER Voltage (Use TP7, PIN 2 for GROUND/- PIN)

CONN	PIN	PINCH Closing V	PINCH Opening V
TP7	1	≈ - 11.00 V DC	≈ 11.00 V AC in Diagnostics

Table 59 LEAD EDGE SENSOR Voltages (Use any GROUND)

CONN	PIN	RECEIVER in PINCH	No RECEIVER
TP8	3	< 1 V DC	> 2.5 V DC

Table 60 Picking Adjustment Voltages

Adjustment	Voltage
RECEIVER Threshold	1.0 ± .1 V DC, Paper in TRAY
RECEIVER Bias	Paper in TRAY = > 1.5 V DC TRANSPARENCY in TRAY = < .75 V DC
DRIVE STEPPER MOTOR	.5 ± .1 V DC
LEAD EDGE SENSOR (TRANSPARENCY installed in PINCH)	.18 -.005 +.07 V DC

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Table 65 Image Size

Size	Specification
A	20.32 x 22.69 ± .064 cm) (8.00 x 8.933 ± .025 in.) 2400 pixels x 2680 lines
A	20.4 x 25.6 cm (8.00 x 10.00 in.) 2400 pixels x 3000 lines
A	20.4 x 30.7 cm (8.00 x 12.00 in.) 2400 pixels x 3626 lines
A4	20.32 x 24.47 ± .064 cm (8.00 x 9.633 ± .025 in.) 2400 pixels x 2890 lines
A4	20.4 x 24.6 cm (8.00 x 9.6 in.) 2400 pixels x 2890 lines
A4	20.4 x 25.6 cm (8.00 x 10.00 in.) 2400 pixels x 3000 lines
9.5 x 14 in.	21.7 x 30.7 cm (8.5 x 12.00 in.) 2550 pixels x 3626 lines

Table 66 Image Placement - Lead Edge

Type	Specification
Lead Edge	2.60 ± .064 cm (1.025 ± .025 in.)

Table 67 Image Placement - Left border (right side of printer)

Size	Type	Specification
A	REFLECTIVE	.63 ± .238 cm (.252 ± .095 in.)
A	TRANSPARENCY	.63 ± .275 cm (.252 ±.110 in.)
A4	REFLECTIVE	.335 ± .238 cm (.134 ± .095 in.)
A4	TRANSPARENCY	.335 cm ± .275 cm (.134 ±.110 in.)
LW	REFLECTIVE	1.24 ± .238 cm (.494 ± .095 in.)
LW	TRANSPARENCY	1.24 ± .275 cm (.494 ±.110 in.)

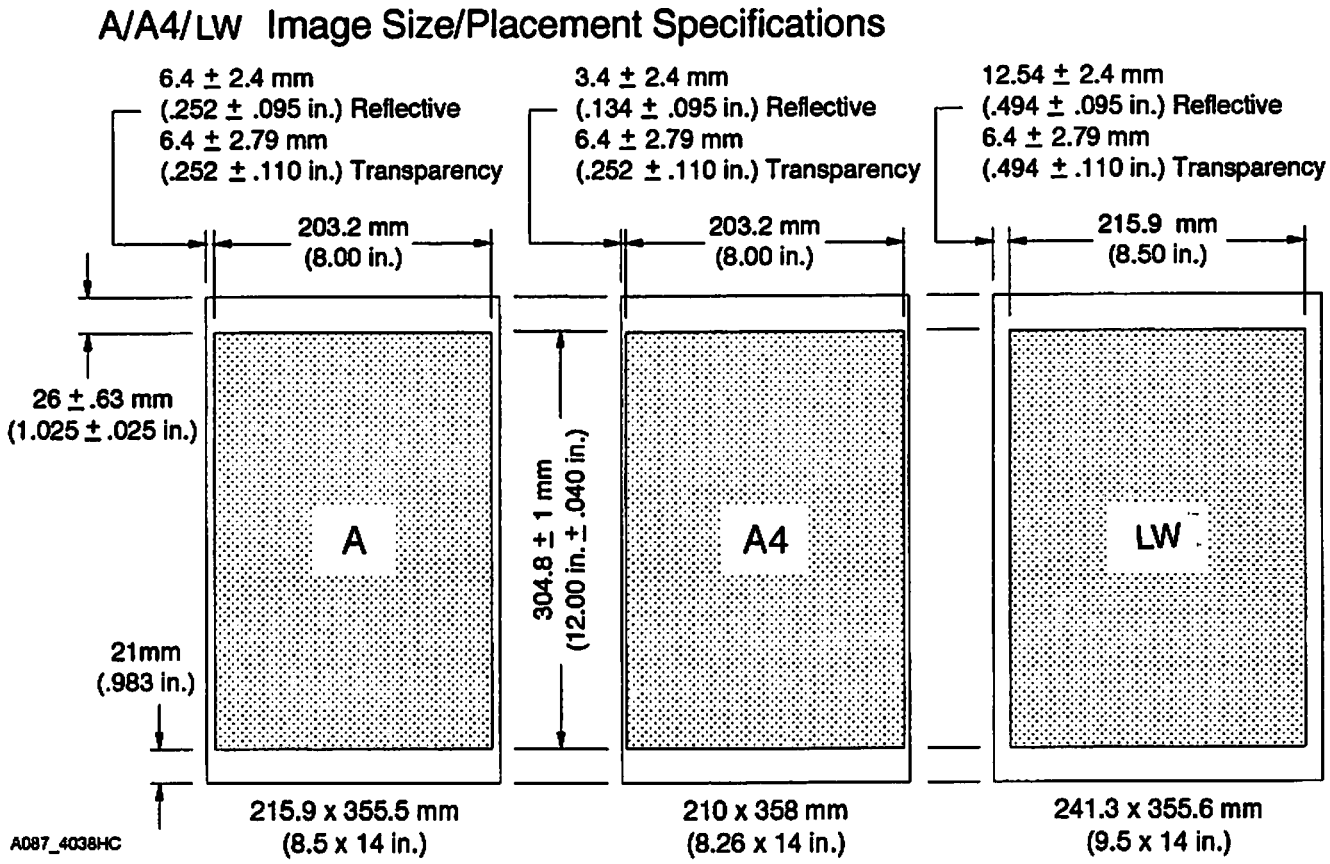

Figure 168

A Long/A4 Long Image Size/Placement Specifications

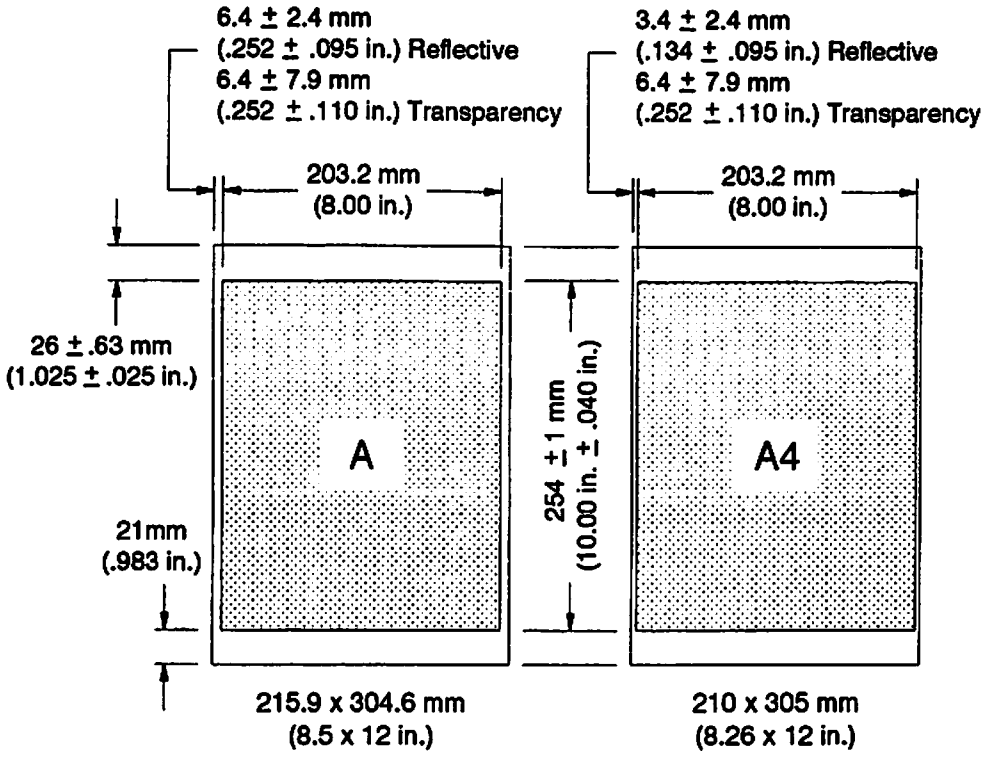

Figure 169

Image Size/Placement Specifications

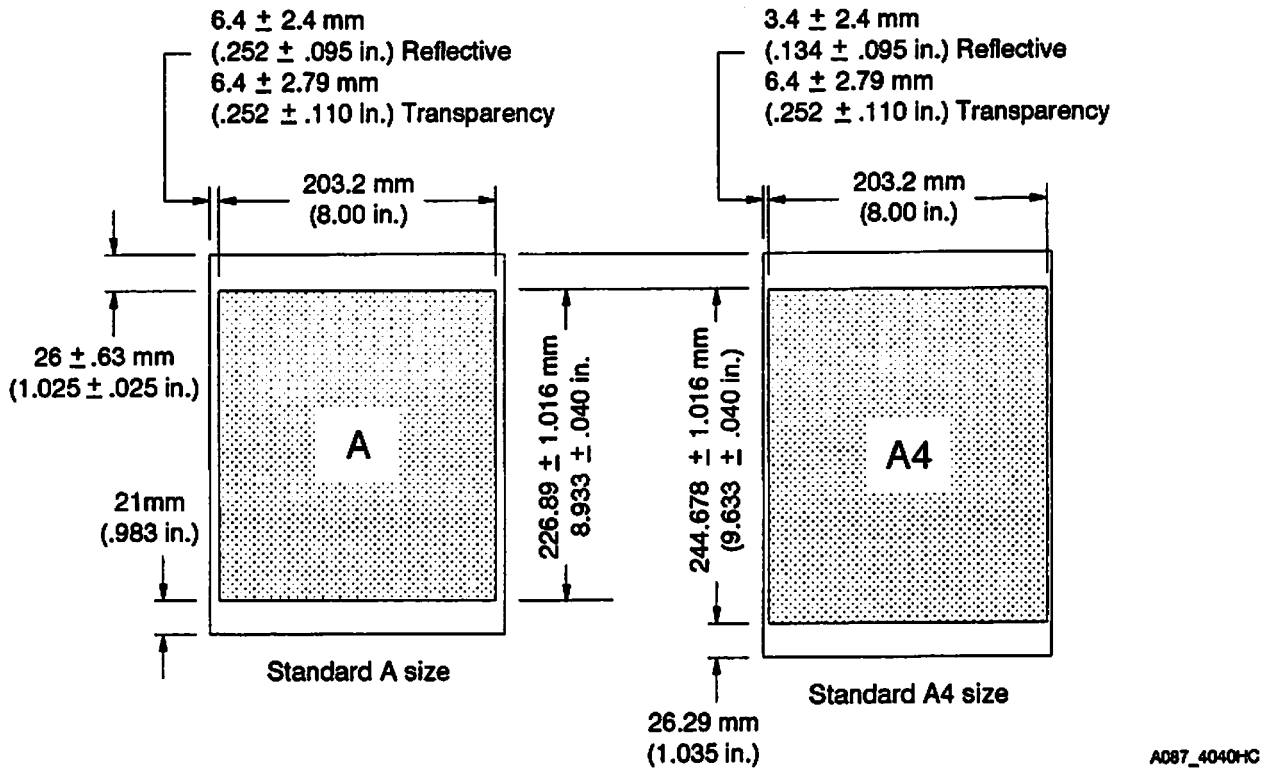

Figure 170

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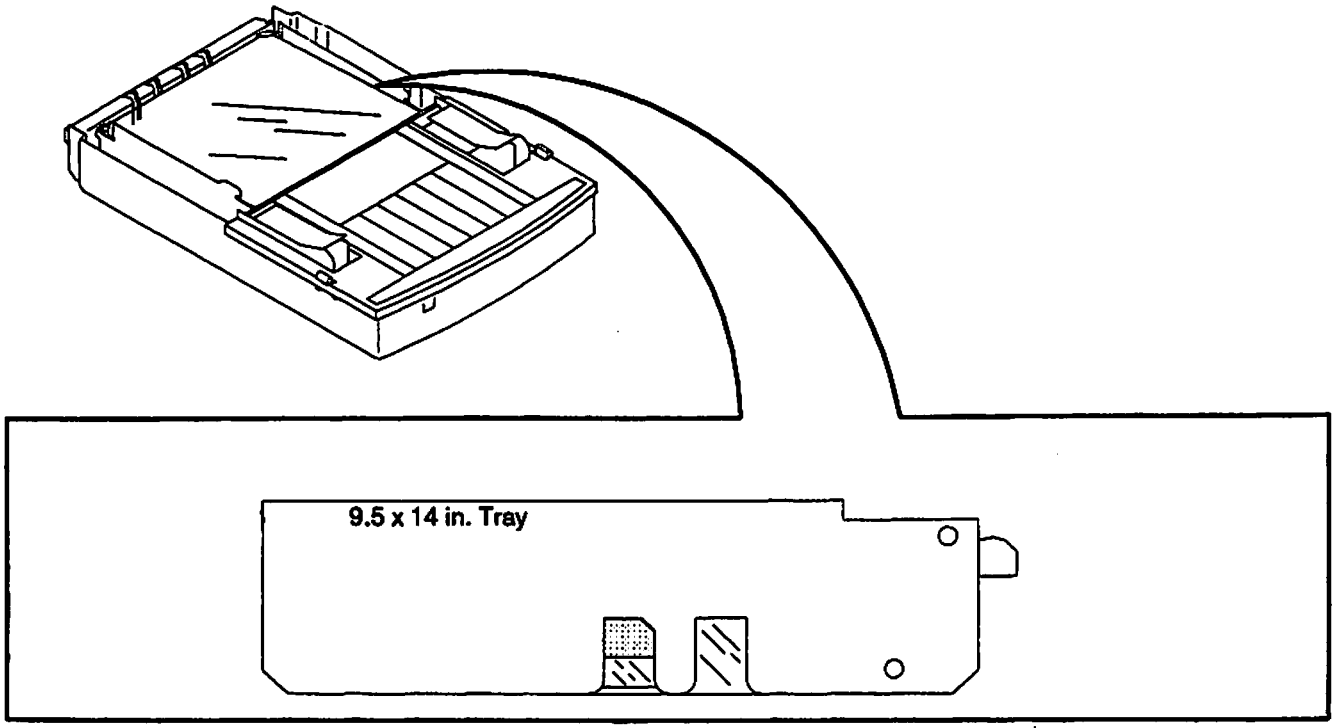


Figure 172

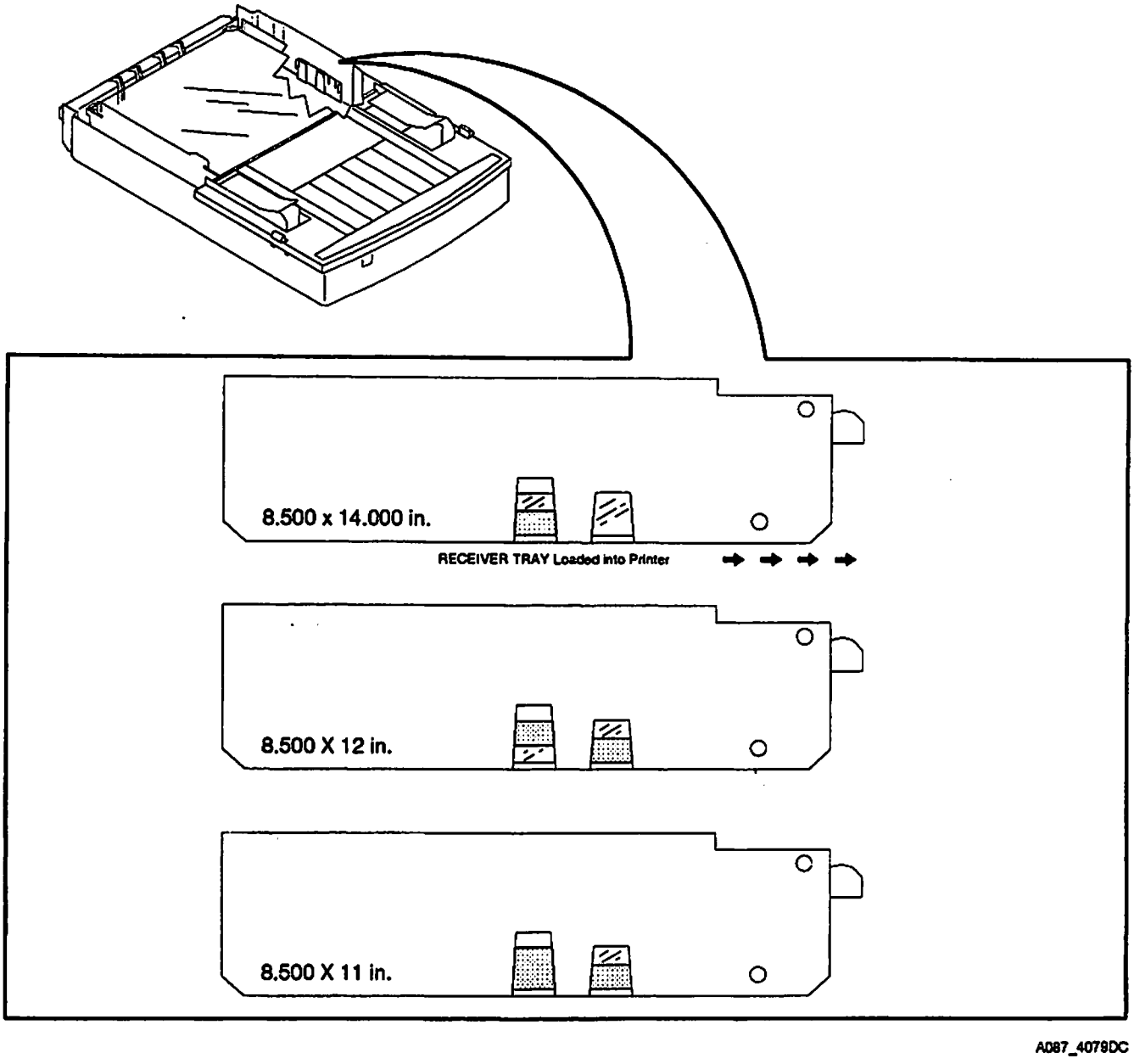


Figure 173 A SIZE UNI ADJUSTABLE TRAY RECEIVER Sizes

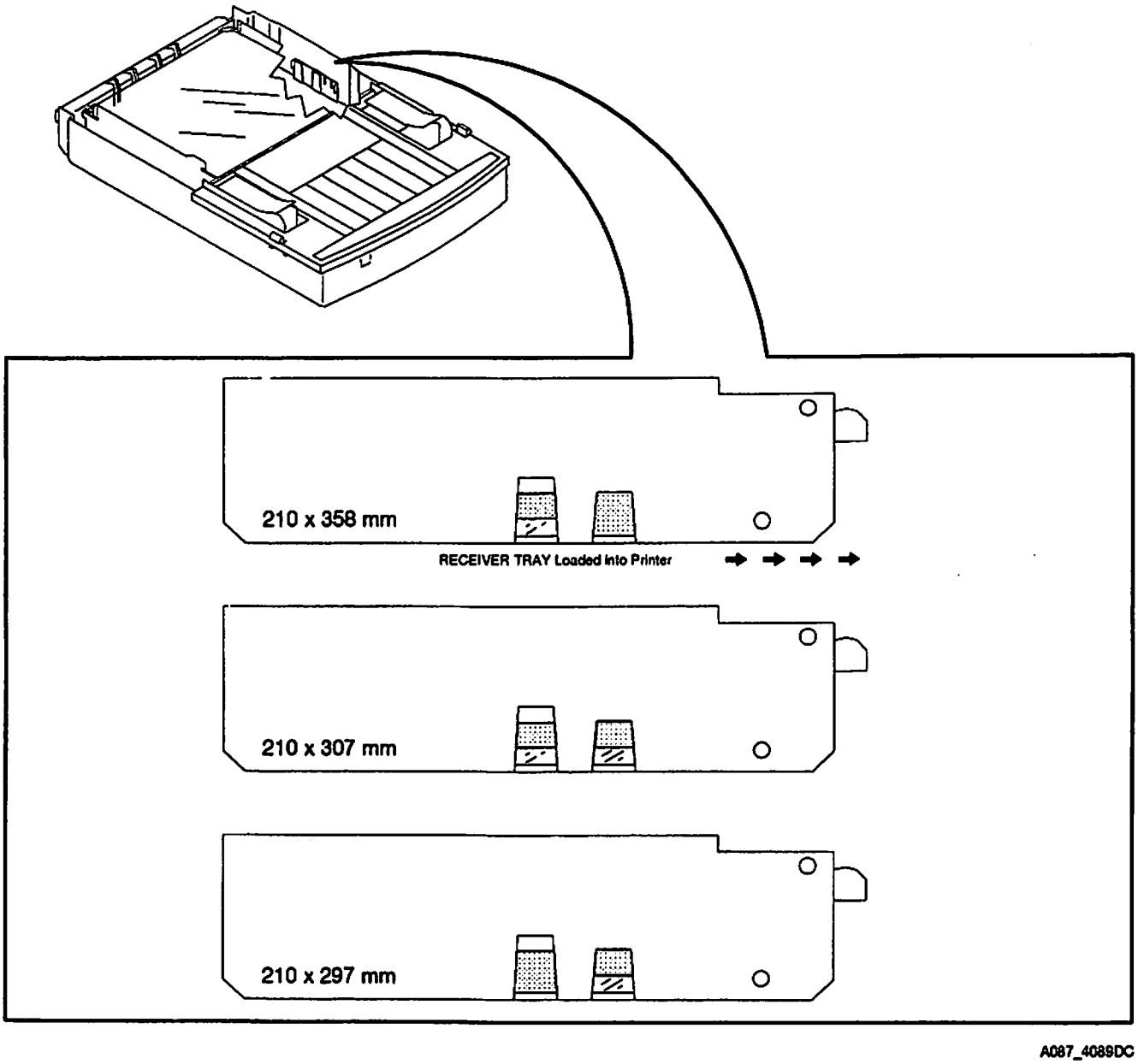
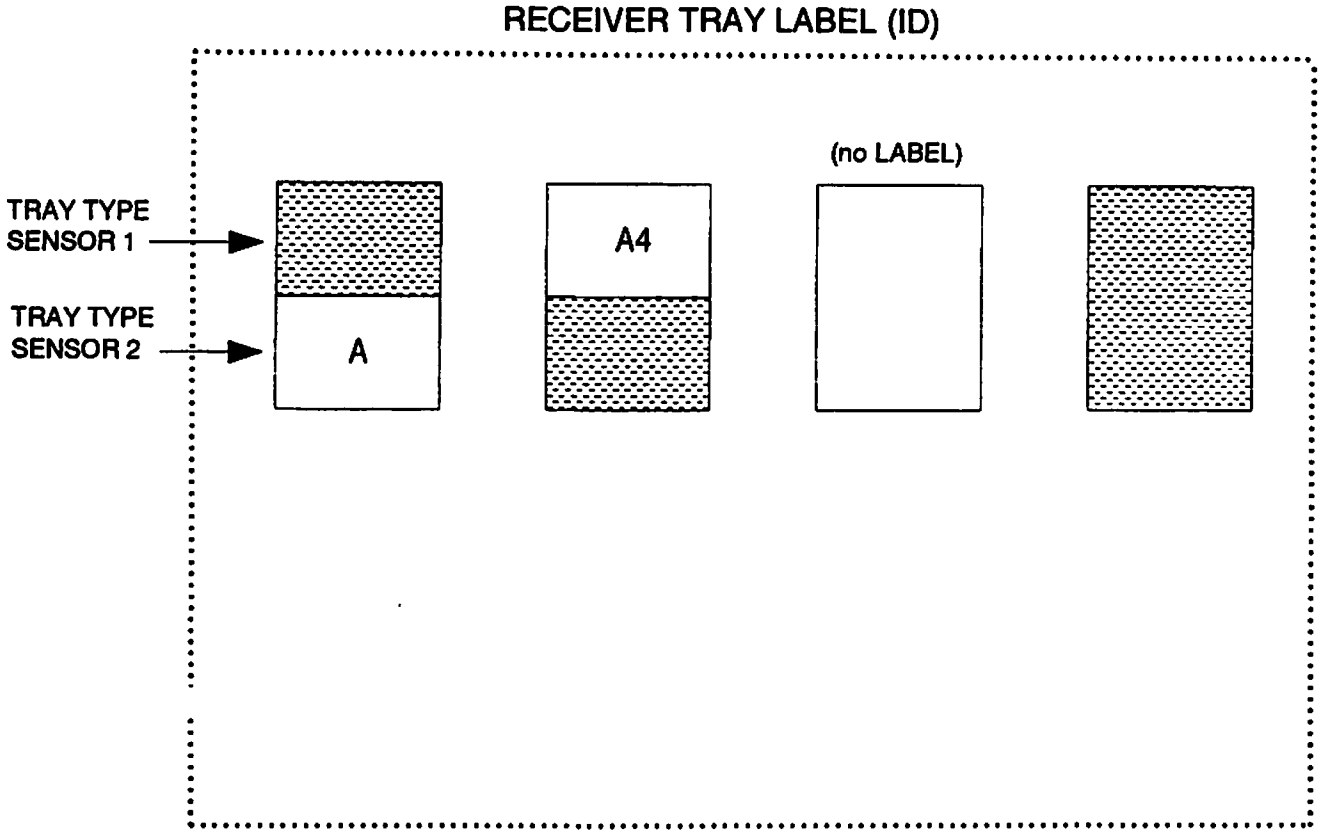


Figure 174 A4 SIZE UNI ADJUSTABLE TRAY RECEIVER Sizes



	TRAY TYPE SENSOR 1	TRAY TYPE SENSOR 2	TRAY TYPE SENSOR 3	Image Size		Receiver Size	
A	■			8.000 x 8.933	203 x 227	8.504 x 10.984	216 x 279
A4		■		8.000 x 9.633	203 x 245	8.268 x 11.693	210 x 297
(A X 12) inch	■		■	8.000 x 10.000	203 x 254	8.504 x 12.087	216 x 307
(A4 X 12) inch		■	■	8.000 x 10.000	203 x 254	8.268 x 12.087	210 x 307
(9.5 x 14) inch	■	■	■	8.500 x 12.000	216 x 305	9.488 x 14.094	241 x 358
(A x 14) inch	■	■		8.000 x 12.000	203 x 305	8.504 x 14.094	216 x 358
(A4 x 14) inch			■	8.000 x 12.000	203 x 305	8.268 x 14.094	210 x 358

A087_9028EC

Figure 175

Picking Preliminary Check

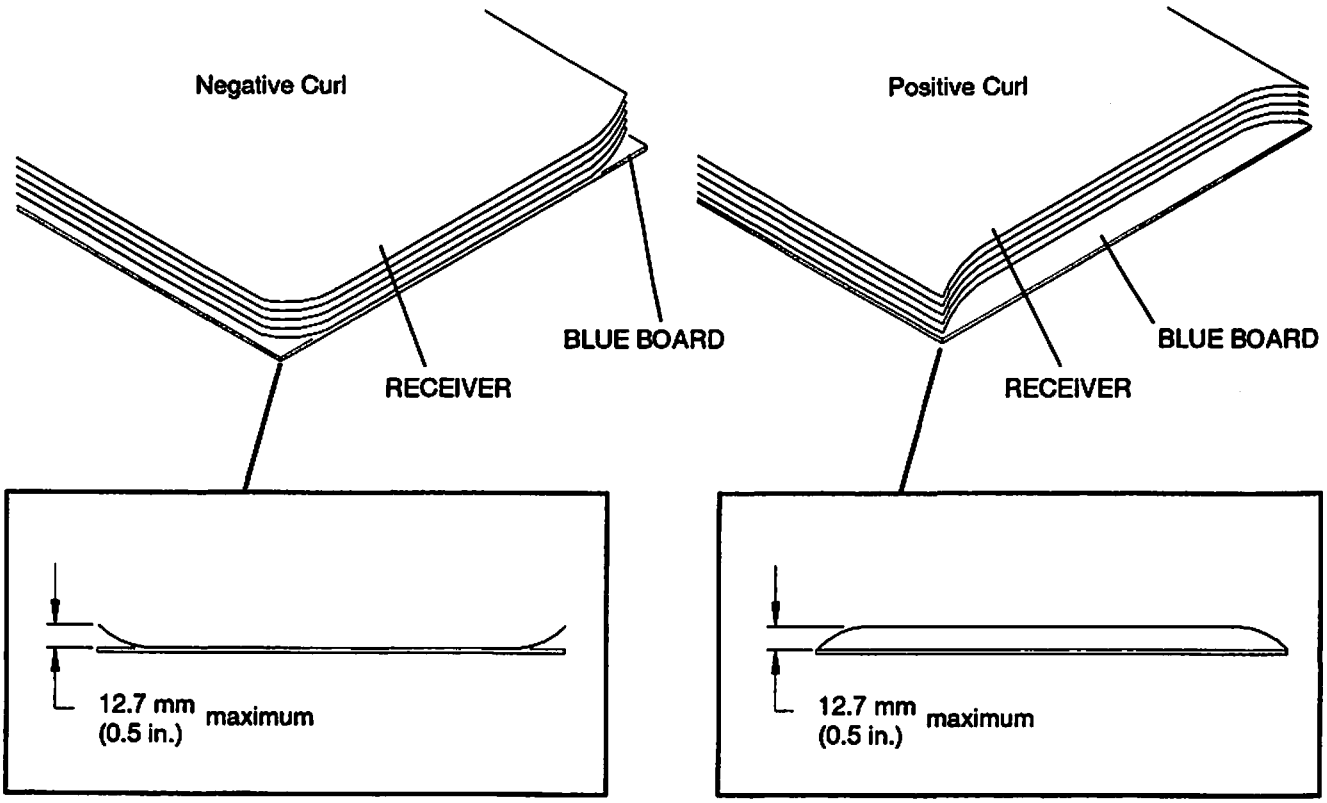
[1] Check that the TRAY is installed and seated correctly.

[2] Check that you have selected the correct type of TRAY (A long or A4 long) and it matches the RECEIVER size installed.

[3] Check that the RECEIVER is installed and it matches the type selected.

[4] Check the media for damage. This could cause a paper jam in the TRAY.

[5] Check for curl in the RECEIVER. The curl should not be more than .500 in. If the curl is greater than .500 in, it might be necessary to recommend to the customer that new RECEIVER without curl should be installed.



A087_4057HCA
A087_4057HC

Figure 176 PAPER CURL

[6] Check that the BASE ENCLOSURE WALLS are in the correct position. This might occur during transport or if the printer has been damaged. This can cause the malfunctions listed below.

- Media jams
- DONOR advance malfunctions
- DONOR unwinds into the EXIT TRAY
- Print artifacts
- Printer does not operate

(a) If the WALLS are not in the correct position, do the BASE ENCLOSURE WALLS adjustment on page 8-18 and the THERMAL HEAD LOAD Gap Adjustment on page 8-13. **Only do the THERMAL HEAD LOAD Gap Adjustment if the BASE ENCLOSURE WALLS are not in the correct position.**

[7] Check that MODIFICATION 3 (Publication MA2836-3) has been installed.

TRAY Malfunctions (Error Codes 502 and 503)

[1] Do the DOOR COVER removal procedure on page 7-6.

[2] Do the ENCASEMENT removal procedure on page 7-8.

[3] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY Access procedure on page 7-25.

[4] Check that the TRAY CODE LABEL is correctly installed and is not partially removed from the TRAY.

IMPORTANT

With the UNI-TRAY, always check that the selection of REFLECTIVE LABELS matches the RECEIVER size.

[5] Access the Diagnostics and go to [DIAG: RECEIVER]. Using the Diagnostics, check that the LCD DISPLAY changes from [NO PAPER] to one of the sizes below:

IMPORTANT

The _____ after the TRAY size will display PAPER or TRANSPARENCY (TRANS) if a RECEIVER is installed. If no RECEIVER is installed, PAPER will display.

- [8.5 x 11 in._____]
- [8.5 x 12 in._____]
- [8.5 x 14 in._____]
- [9.5 x 14 in._____]
- [A4_____]
- [210 x 307 mm._____]
- [210 x 358 mm_____]
- [7 x 8 1/2 in._____]

[6] If the TRAY selection matches the TRAY, the system is operating correctly. If the TRAY selection does not change or read the correct type, go to the next step.

[7] Check that the TRAY CODE SENSOR is not loose or has any damage.

[8] Insert the TRAY and check that the TRAY CODE SENSORS align with the TRAY LABELS.

[9] Check the voltages from the TRAY CODE SENSORS.

(a) Set the DIGITAL VOLT METER to DC voltage.

(b) Connect the black PROBE (-) to TP11, PIN 5 for GROUND.

(c) Use the following table to measure the voltages for the A TRAY, A4 TRAY, LW TRAY, and NO TRAY.

Table 68 TRAY Voltage Verification Chart

TP	A	A long	8 1/2 x 14 in.	9 1/2 by 14 in.	A4	A4 long	A4 x 14 in.
2	>1.5 V DC	<1.5 V DC	> 1.5 V DC	>1.5 V DC	>1.5 V DC	<1.5 V DC	<1.5 V DC
3	>1.5 V DC	>1.5 V DC	< 1.5 V DC	>1.5 V DC	<1.5 V DC	<1.5 V DC	>1.5 V DC
4	<1.5 V DC	<1.5 V DC	< 1.5 V DC	>1.5 V DC	>1.5 V DC	>1.5 V DC	>1.5 V DC

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[10] Remove the TRAY CODE SENSORS and align them facing toward the ALUMINUM BASE. Both TEST POINTS (TP) from the voltage chart above should be below 1.5 V DC.

(a) If the TRAY CODE SENSORS change state under the voltage specification, align the TRAY CODE LABELS to the TRAY CODE SENSORS.

(b) If the voltages are not correct or do not change state, go to the next step.

[11] Check the TRAY CODE CABLE from the TRAY CODE SENSORS to P11 on the CONTROLLER PRINTED CIRCUIT BOARD; check that P11 is correctly seated.

(a) If the TRAY CODE SENSORS still do not change at the TEST POINTS listed in the chart above, install a new TRAY CODE SENSOR ASSEMBLY.

(b) If the TRAY CODE SENSORS (TEST POINTS) change within the specifications, but the TRAY size or removal is **not** indicated during the diagnostic test, install a new CONTROLLER PRINTED CIRCUIT BOARD.

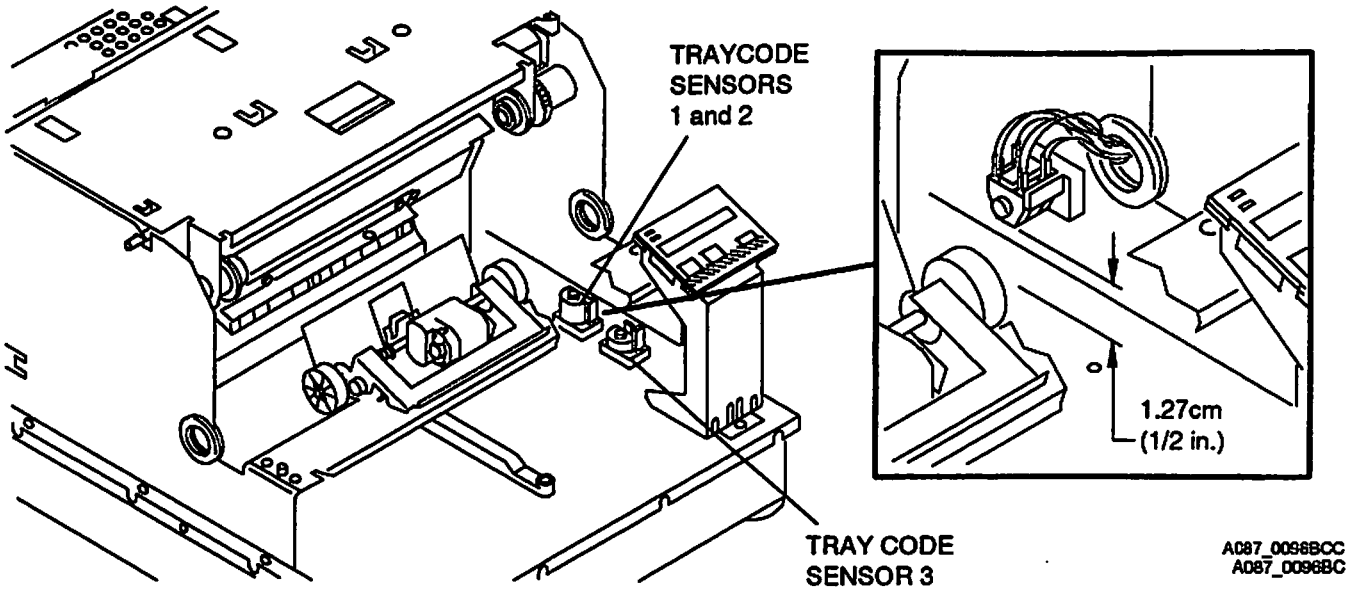

TRAYCODE
SENSORS
1 and 2
1.27cm
(1/2 in.)
TRAY CODE
SENSOR 3
A087_0096BCC
A087_0096BC

Figure 177

[1] Do the DOOR COVER removal procedure on page 7-6.

[2] Do the ENCASEMENT removal procedure on page 7-8.

[3] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY Access procedure on page 7-25.

[4] Set the DIGITAL VOLT METER to DC voltage.

[5] Do the RECEIVER THRESHOLD adjustment on page 8-6.

[6] If the voltages are not within specification, check that the RECEIVER TYPE SENSOR is not loose on the PICKER MECHANISM.

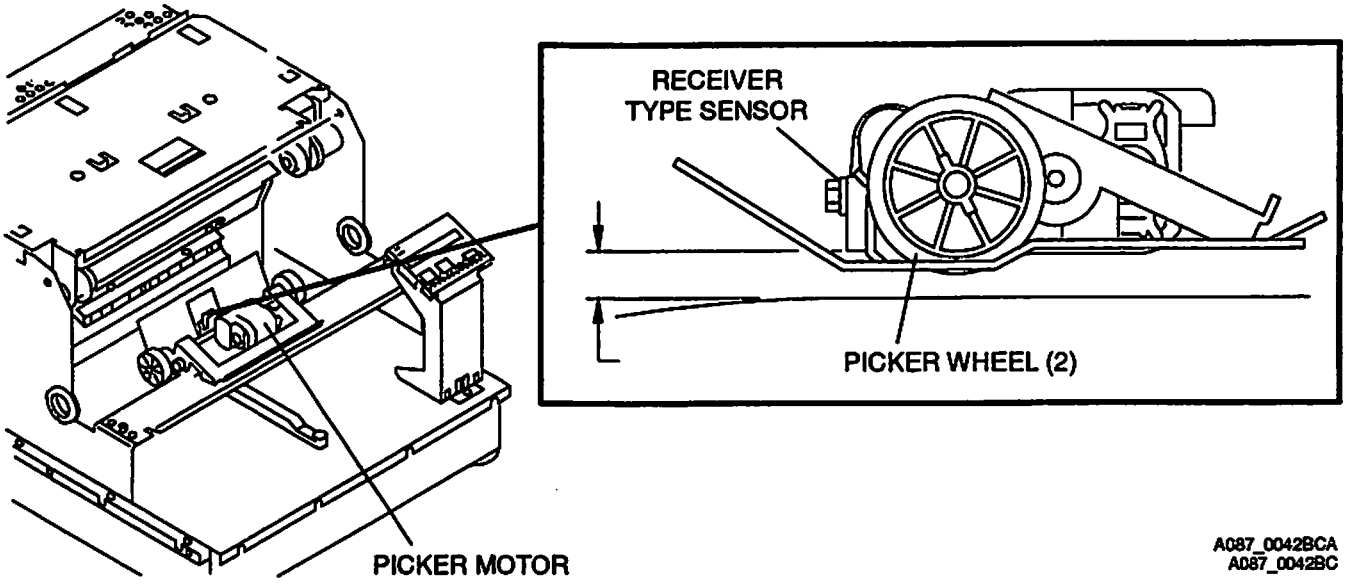


Figure 178

[7] Check that the RECEIVER TYPE SENSOR is correctly seated on the CONTROLLER PRINTED CIRCUIT BOARD (CONNECTOR P8).

[8] If the RECEIVER TYPE SENSOR voltage is not within specification, install a new PICKER ASSEMBLY.

[9] If the voltages at TP2, PIN 6 (+) and TP4, PIN 6 (-) from the RECEIVER THRESHOLD adjustment on page 8-6 are within specification but change is not sensed, go to the next step.

[10] Access the Diagnostics; go to DIAG: RECEIVER.

(a) Install paper or TRANSPARENCY. The LCD DISPLAY should read 8 1/2 x 11 in. PAPER or 8 1/2 x 11 in. TRANS depending on the TRAY and RECEIVER size selected.

(b) If change does not occur on the LCD DISPLAY, and the voltages are changing at TP2, PIN 6 and TP4, PIN 6, install a new CONTROLLER PRINTED CIRCUIT BOARD.

Picking Malfunctions (Error Codes 501 and 502)

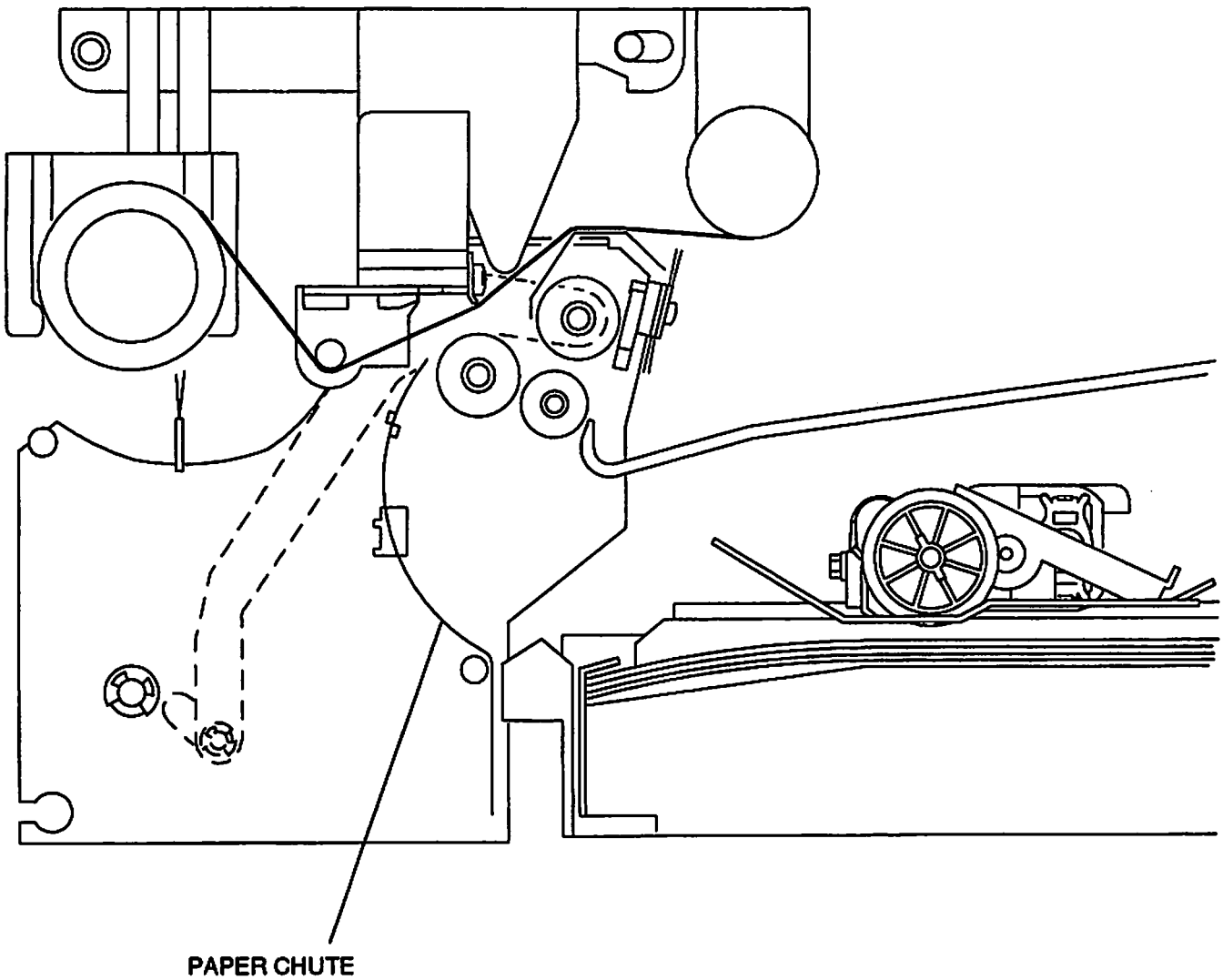
[1] Do the DOOR COVER removal on page 7-6.

[2] Do the ENCASEMENT removal on page 7-8.

[3] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY Access Procedure on page 7-25.

[4] Check the paper in the TRAY for damage that could cause a paper jam in the PAPER CHUTE.

[5] Install RECEIVER and DONOR.



A087_0075DCC
A087_0075DC

Figure 179

[6] Insert only 25 RECEIVERS into the TRAY.

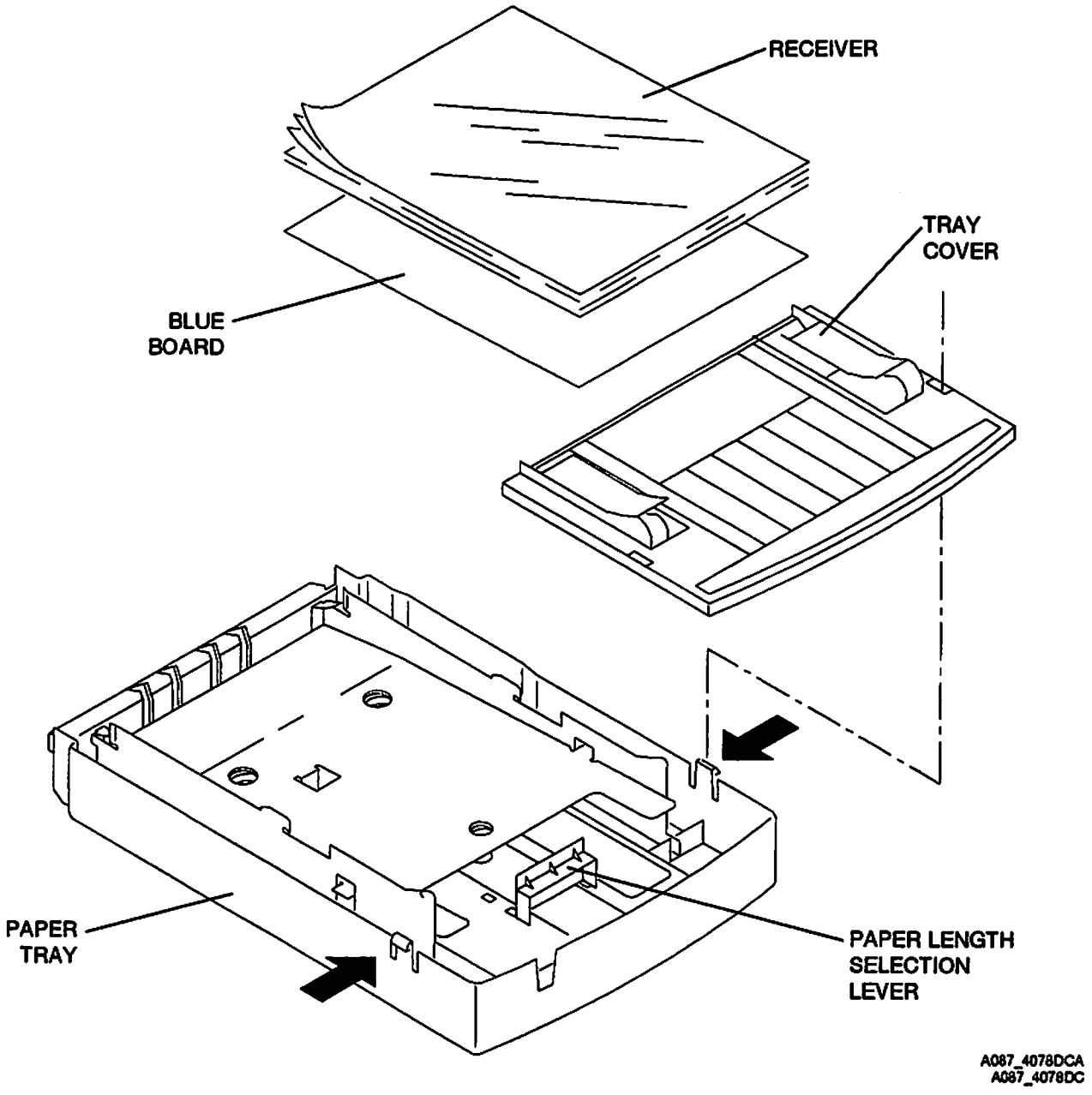


Figure 180

IMPORTANT

SR 408 can be a non-fatal error that occurs when there is a picking malfunction. This might be caused by not having RECEIVER or DONOR installed, paper curl, damage on the BASE ENCLOSURE ASSEMBLY WALLS, or the THERMAL HEAD LOAD gap distance is not correct. See the Picking Preliminary Check Section.

[7] Access the Diagnostics; go to [OPTIONS]. Select the pick and eject cycle [<CYCLE: PCK/EJCT]. The < indicates that the option is on in the cycle type set up.

[8] Select Loop Enable and exit the Diagnostics.

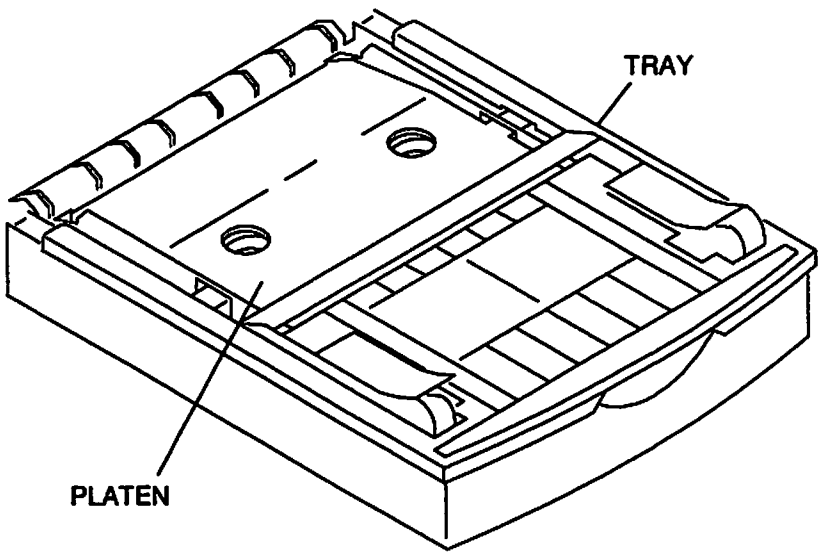
[9] Press the PRINT BUTTON in Engine Ready to start the pick and eject cycle.

(a) If the printer picks, the picking malfunction could be caused by low humidity (< 15% relative humidity). If the printer does not pick, go to the next step.

[10] If the printer will not pick, check that the TRAY PLATEN and SPRINGS operate correctly.

(a) Press your hand down on the TRAY PLATEN then release; the TRAY PLATEN should move back up when you release your hand and all 3 PLATEN SPRINGS should be in place.

(b) If the TRAY PLATEN moves back up, it is operating correctly; go to the next step. If the TRAY PLATEN does not move back up, install a new TRAY.



A087_0041BCA
A087_0041BC

Figure 181

[11] Check that the PICKER MOTOR operates correctly.

[12] Check that CONNECTOR P8 is correctly seated on the CONTROLLER PCB.

[13] Check the voltage on the PICKER MOTOR.

(a) Set the DIGITAL VOLT METER to DC voltage.

(b) Connect the red PROBE to TP2, PIN 4.

(c) Connect the black PROBE to TP2, PIN 5.

(d) Access the Diagnostics; go to OPTIONS, [OPT: CYCLE TYPE] and start the pick cycle. The DIGITAL VOLT METER should read ≈ 10.5 V DC when the PICKER MOTOR is picking.

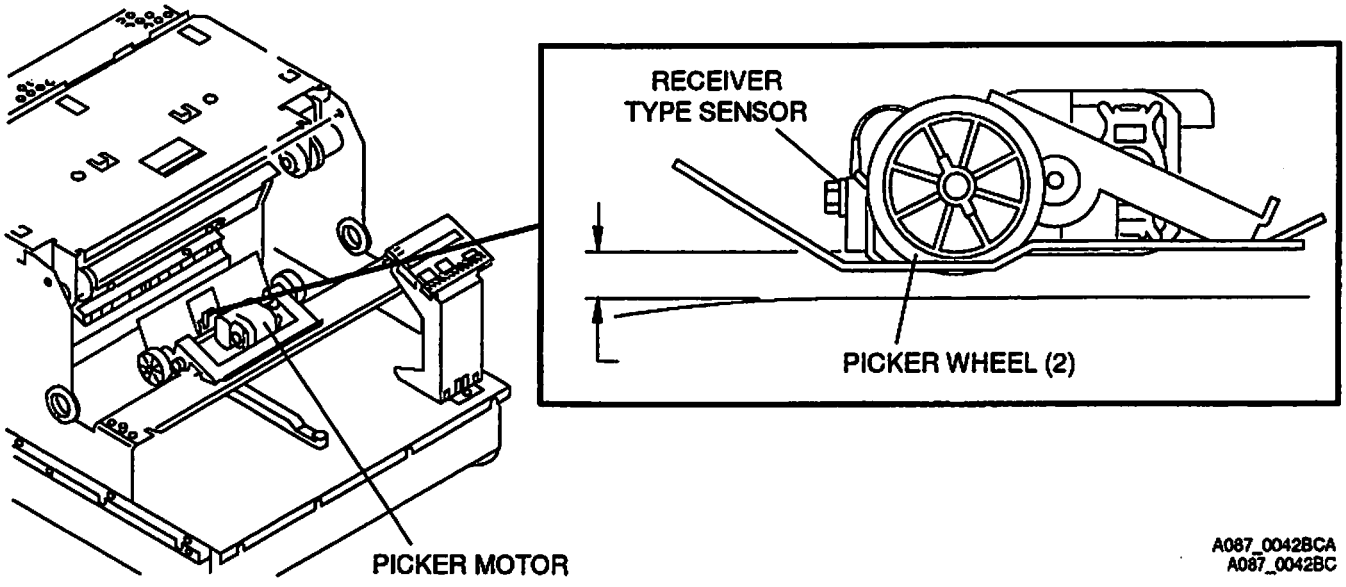


Figure 182

[14] If the voltage is present and the PICKER MOTOR does not operate, install a new PICKER ASSEMBLY.

[15] If the voltage is not present, install a new CONTROLLER ASSEMBLY.

[16] If the voltages are present and the PICKER MOTOR operates, there might be a RECEIVER jam in the ROLLER ASSEMBLY; go to the next step.

[17] Access the Diagnostics; go to [DIAG: MOTORS]; select [MTRS: FWD].

[18] Do the DRIVE STEPPER MOTOR adjustment procedure on page 8-9.

[19] Check that P10 is correctly seated on the CONTROLLER PRINTED CIRCUIT BOARD.

[20] Check the AC voltage on the STEPPER PHASES.

(a) Connect the DIGITAL VOLT METER PROBES to the STEPPER PHASES then use the following tables.

IMPORTANT

The red PROBE table tells you where to connect the red PROBE, the black PROBE table tells you where to connect the black PROBE.

Table 69 Red PROBE - STEPPER PHASES

CONNECTOR	PIN	PHASE
TP7	4	A1
TP9	2	B1
TP7	6	C1
TP9	4	D1

Table 70 Black PROBE - STEPPER PHASES

CONNECTOR	PIN	PHASE
TP7	3	A2
TP9	1	B2
TP7	5	C2
TP9	3	D2

[21] The DIGITAL VOLT METER should read ≈ 10.8 V AC across each phase in Diagnostics.

(a) If the voltages are present and the STEPPER MOTOR does not operate, install a new ROLLER ASSEMBLY.

(b) If the voltages are not present, install a new CONTROLLER PRINTED CIRCUIT BOARD.

(c) If the STEPPER MOTOR operates and all the voltages are present, go to the next step.

[22] Check that the PLATEN ROLLER rotates.

[23] Check the DC voltage across the PLATEN BRAKE.

(a) Set the DIGITAL VOLT METER to DC voltage.

(b) Connect the red PROBE to TP9, PIN 5.

(c) Connect the black PROBE to TP9 PIN 6.

(d) Check that the P10 CONNECTOR is inserted into PINS 1 and 3.

(e) Make a test print.

[24] The DIGITAL VOLT METER should read < 1 V DC when picking and ejecting and ≈ 11.00 V DC in all other modes.

(a) If the voltages do not change, install a new CONTROLLER PRINTED CIRCUIT BOARD.

(b) If the voltages are present and change, but the PLATEN ROLLER has a bind, install a new ROLLER ASSEMBLY.

(c) If the voltages are present and change and there is no bind in the PLATEN ROLLER, go to the next step.

[25] Check that the PINCH ROLLER operates and that voltage is present.

(a) Check that CONNECTOR P10 is correctly seated.

(b) Access the Diagnostics; go to [DIAG: PINCH TEST].

(c) Install a sheet of paper between the PINCH ROLLER and the CAPSTAN TRACTION ROLLER.

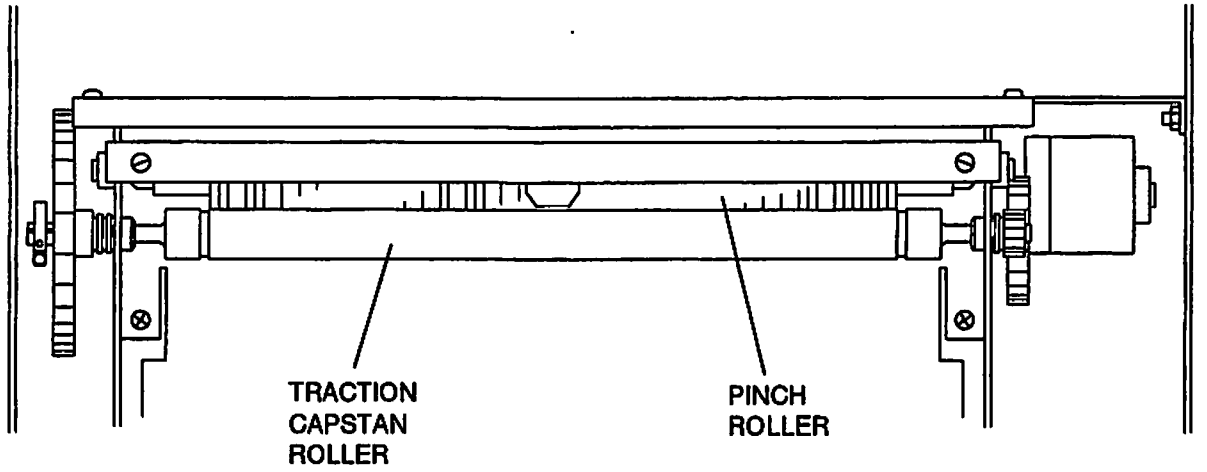


Figure 183

(d) Select [PINCH: CLOSE] in the Diagnostics.

(e) The paper should be held in place by the PINCH.

[26] Check the voltage.

(a) Set the DIGITAL VOLT METER to DC voltage.

(b) Connect the red PROBE to TP7, PIN 1.

(c) Connect the black PROBE to TP7, PIN 2.

1. The DIGITAL VOLT METER should read 11.0 V DC when closing.
2. The DIGITAL VOLT METER should read 11.0 V DC when opening.

(d) If the voltages are present and the PINCH does not open or close, install a new ROLLER ASSEMBLY.

(e) If the voltages are not present, install a new CONTROLLER PRINTED CIRCUIT BOARD.

(f) If the voltages are present and the PINCH operates, go to the next step.

[27] Check that the LEAD EDGE SENSOR operates.

(a) Do the LEAD EDGE SENSOR adjustment procedure on page 8-4.

(b) Access the Diagnostics; go to [DIAG: PINCH TEST]; go to [PINCH: OPEN].

(c) Insert a sheet of paper under the LEAD EDGE SENSOR.

[28] Set the DIGITAL VOLT METER to DC voltage.

(a) Connect the red PROBE to TP8, PIN 3.

(b) Connect the black PROBE to any GROUND.

(c) The DIGITAL VOLT METER should read < 1 V DC with a RECEIVER in the PINCH.

(d) The DIGITAL VOLT METER should read > 2.5 V DC with no RECEIVER in the PINCH.

(e) If one of the voltages is present but does not change, install a new ROLLER ASSEMBLY.

(f) If the voltage is not present, install a new CONTROLLER PRINTED CIRCUIT BOARD.

(g) If the voltages are present and change with and without a RECEIVER, go to the next step.

[29] If there is still a malfunction in picking, determine the position of the RECEIVER when the malfunction occurs. Environmental conditions or no DONOR movement can cause a jam or malfunction.

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CONTROLLER PRINTED CIRCUIT BOARD Safety

NOTE

The CONTROLLER PRINTED CIRCUIT BOARD operates on 5 and 12 V DC.

CONTROLLER PRINTER CIRCUIT BOARD Functional Description

The CONTROLLER PRINTED CIRCUIT BOARD is the electronic CIRCUIT BOARD that operates the print ENGINE. It also interfaces with the PLATFORM through the PRINT ENGINE INTERFACE (PEI). The CONTROLLER PRINTED CIRCUIT BOARD controls all of the necessary operations of the mechanical ENGINE necessary to convert the digital image data into a hard copy print.

The CONTROLLER PRINTED CIRCUIT BOARD includes the CENTRAL PROCESSING UNIT (CPU), PULSE HEAD MODULATOR (PHM), ELECTRICALLY ERASEABLE PROGRAMMABLE READ ONLY MEMORY (EEPROM), PROGRAMMABLE READ ONLY MEMORY (PROM), INTERFACE CONTROL PAL (I/F), DSP, DSP PROM, INPUT/OUTPUT PAL (I/O), MEMORY CHECK PAL (MEM), ADJUSTABLE RESISTORS (VR), TESTPOINTS (TP), and the CONNECTORS to both the electromechanical components on the ENGINE and the electronics on the PLATFORM.

CONTROLLER PRINTED CIRCUIT BOARD Tools

Table 71 CONTROLLER PRINTED CIRCUIT BOARD Tools

Part Number	Description
TL-3190	ELECTROSTATIC DISCHARGE PORTABLE FIELD SERVICE KIT
TL-3386	DIGITAL VOLT METER, *Fluke* Manufacturing Co., #77

CONTROLLER PRINTED CIRCUIT BOARD Specifications

The supply voltage is 5 and 12 V DC.

CONTROLLER PRINTED CIRCUIT BOARD Preliminary Check

[1] Check that all CONNECTORS are correctly seated.

[2] Check that the POWER LEDs are illuminated.

[3] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY Access procedure on page 7-25.

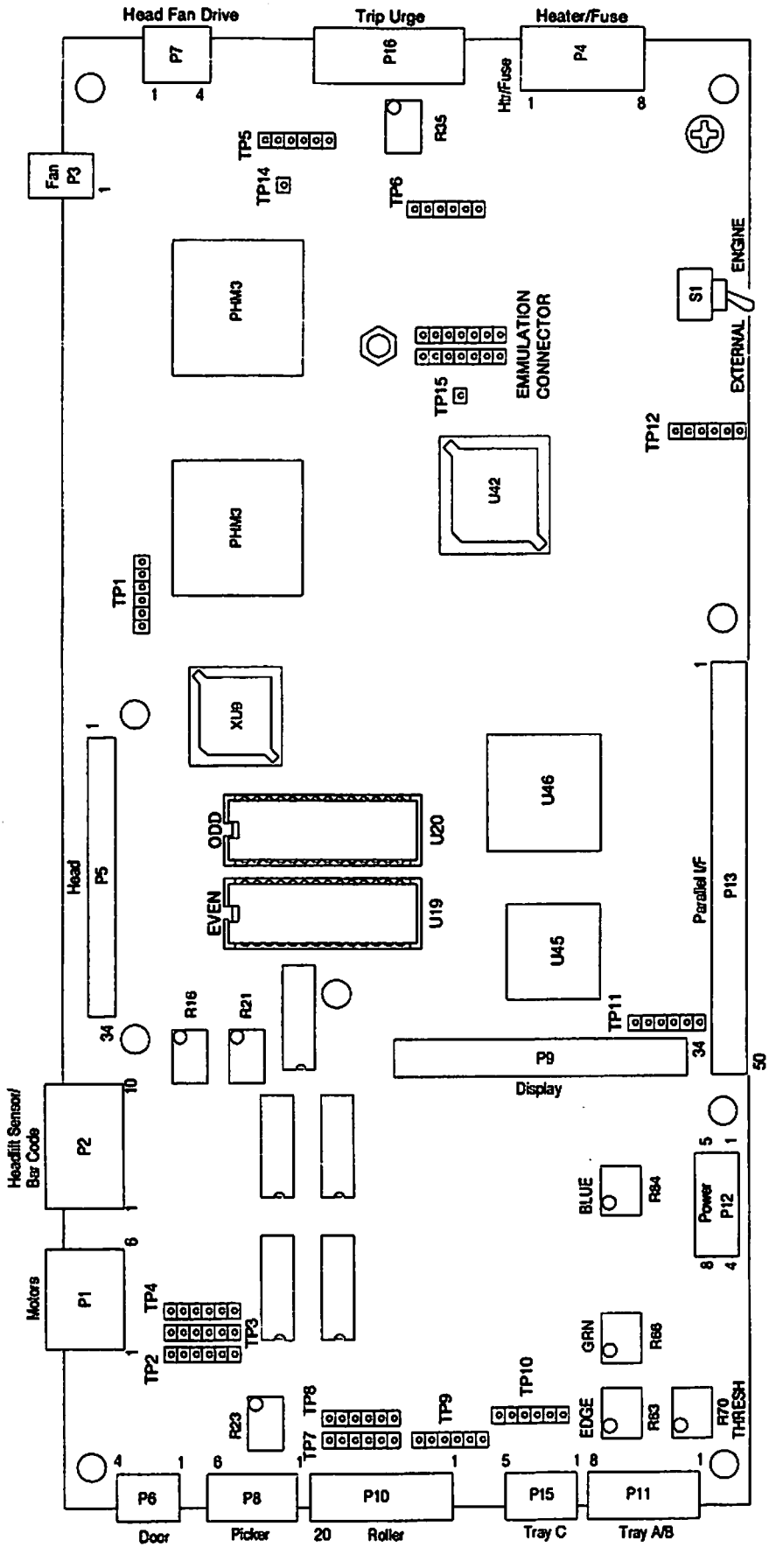

Figure 184 CONTROLLER BOARD Component Locations

IMPORTANT

Most of the error codes occur when the printer initializes.

[1] Access the Diagnostics and select [DIAG: ENG VER #s].

[2] Scroll through the versions and check that the ENGINE version information does not display [BAD MEM] or [NONE] in the following versions:

- [VER: CR____]
- [VER: CT____]
- [VER: PR____]
- [VER: ER____]
- [VER: ET____]

[3] Access the Diagnostics and select [DIAG: PRN USAGE]. Scroll through the usage information and check that it does not display [BAD MEM] or [NONE] in the messages.

- [USE: PWR_____]
- [USE: P-S_____]
- [USE: P-C_____]
- [USE: PLN_____]
- [USE: RFL_____]
- [USE: TRN_____]
- [USE: B-1_____]

[4] Access the Diagnostics and select [DIAG: CTRLR TEST]. Scroll through the tests and select [CTRLR: C EEPROM] or [CTRLR: TEST ALL].

[5] Check that after selecting and doing these CONTROLLER tests that [CTRLR: SR# 600], [CTRLR SR# 601] or [SR# 602] is not displayed.

[6] If [BAD MEM], [NONE], or [SR# 600], [SR# 601], or [SR# 602] is displayed in any of the previous steps, install a new PROM U43 and energize the printer.

[7] If the error code is still present, install new PROMS U19 and U20 and energize the printer.

[8] If the error codes are still present, install a new CONTROLLER PRINTED CIRCUIT BOARD.

Error Codes 608, 609, 60A, 60C, and 719

IMPORTANT

Most of these error codes occur when the printer initializes or during the print cycle.

[1] Access the Diagnostics and select [DIAG: ENG VER #s]. Scroll through the versions and check that the ENGINE version information in the version [VER: H ____] does not display [BAD MEM] or [NONE].

[2] Access the Diagnostics and select [DIAG: PRN USAGE]. Scroll through and check that the usage information in [USE: PLN] does not display [BAD MEM] or [NONE].

[3] Access the Diagnostics and select [DIAG: CTRLR TEST]. Scroll through the test and select [CTRLR: TEST ALL] or [CTRLR: H EEPROM].

[4] Check that after selecting and doing these CONTROLLER tests that [CTRLR: SR# 608], [SR# 609], [SR# 60a], [SER # 60b], or [SR# 719] are not displayed.

[5] If [BAD MEM], [NONE], [CTRLR: SR# 608], [SR# 609], [SR# 60a], [SER # 60b], or [SR# 719] are displayed in any of the previous steps, check that the THERMAL HEAD DATA CABLE is correctly installed and seated, then energize the printer.

[6] If the error codes are still present, install a new THERMAL HEAD DATA CABLE or THERMAL HEAD ASSEMBLY and energize the printer.

[7] If the error codes are still present, install a new CONTROLLER PRINTED CIRCUIT BOARD.

Error Code 610 (No Display Message)

[1] Check that the DISPLAY CABLE is connected.

[2] Energize the printer.

[3] If the 16-SEGMENT LCD does not illuminate, install a new DISPLAY PANEL and energize the printer.

[4] If the 16-SEGMENT LCD still does not illuminate, install a new CONTROLLER PRINTED CIRCUIT BOARD.

IMPORTANT

This error occurs if the data is missing from the CONTROLLER EEPROM or the THERMAL HEAD EEPROM.

[1] Access the Diagnostics and select [DIAG: ENG VER #s]. Scroll through the versions and check that the ENGINE version information in the following versions does not display [NONE].

- [VER: CR____]
- [VER: CT____]
- [VER: PR____]
- [VER: ER____]
- [VER: ET____]
- [VER: H____]

[2] Access the Diagnostics and select [DIAG: PRN USAGE]. Scroll through and check that the usage information in the following versions does not display [NONE].

- [USE: PWR____]
- [USE: P-S____]
- [USE: P-C____]
- [USE: PLN____]
- [USE: RFL____]
- [USE: TRN____]
- [USE: B-1____]

[3] Access the Diagnostics and select [DIAG: CTRLR TEST]. Scroll through the test and select [CTRLR: TEST ALL], [CTRLR: C EEPROM], and [CTRLR: H EEPROM].

[4] Check that after selecting and doing all of the CONTROLLER tests that [CTRLR: SR# 618] is not displayed.

[5] If [NONE] is displayed in any of the versions below

- [VER: CR]
- [VER: CT]
- [VER: PR]
- [VER: PT]
- [VER: ER]
- [VER: ET]

In print usage in the following versions:

- [USE: PWR]
- [USE: P-S]
- [USE: P-C]
- [USE: RFL]
- [USE: TRN]
- [USE: B-1]

and [SR# 618] is displayed in [DIAG: CTRLR TEST] and [CTRLR: C EEPROM], install a new EEPROM U43.

[6] If [NONE] is displayed in version [VER: H NONE] and in print usage [USE: PLN NONE] and [SR# 618] is displayed in [DIAG: CTRLR TEST] [CTRLR: H EEPROM], install a new THERMAL HEAD.

Error Code 718

[1] Access the Diagnostics and select [DIAG: CTRLR TEST]. Scroll through the tests and select [CTRLR: ADC] or [CTRLR: TEST ALL].

[2] Check that after selecting and doing these CONTROLLER tests that [CTRLR: SR# 718] is not displayed.

[3] If error code 718 is displayed, install a new CONTROLLER PRINTED CIRCUIT BOARD.

Error Codes 720 and 721

[1] De-energize the printer.

[2] Go to step 3.

[3] Energize the printer.

(a) If the error codes are still present, go to the next step.

(b) If the error codes are not present, make a test print.

[4] De-energize the printer.

[5] Go to step 6.

[6] Energize the printer.

(a) If the error codes are still present, go to the next step.

[7] De-energize the printer.

[8] Install a new CONTROLLER PRINTED CIRCUIT BOARD.

[9] Energize the printer.

[10] Make a test print.

Error Codes 738 and 739

[1] Access the Diagnostics and select [DIAG: CTRLR TEST]. Scroll through and select [CTRLR: RAM 0], [CTRLR: RAM 1] or [CTRLR: TEST ALL].

[2] Check that after selecting and doing these CONTROLLER tests that [CTRLR: SR# 738] or [SR# 739] is not displayed.

[3] If error codes 738 or 739 are displayed, install a new CONTROLLER PRINTED CIRCUIT BOARD.

Error Code 740

[1] Access the Diagnostics and select [DIAG: CTRLR TEST]. Scroll through the tests and select [CTRLR: MATCH VERS] or [CTRLR: TEST ALL].

[2] Check that after selecting and doing these CONTROLLER tests that [CTRLR: SR# 740] is not displayed.

[3] If error code 740 is displayed, install new PROMS U19 and U20.

[4] If error code 740 is still displayed, install a new CONTROLLER PRINTED CIRCUIT BOARD.

Error Codes 741 and 742

[1] Access the Diagnostics and select [DIAG: CTRLR TEST]. Scroll through and select [CTRLR: PROM 0], [PROM 1], or [CTRLR: TEST ALL].

[2] Check that after selecting and doing these CONTROLLER tests that [CTRLR: SR# 741] or [SR# 742] is not displayed.

[3] If error code 741 or 742 is displayed, install new PROMS U19 and U20.

[4] If error code 741 or 742 is still displayed, install a new CONTROLLER PCB.

Error Codes 748, 749, 74A, 74B, 74C, 74D

[1] Access the Diagnostics and select [DIAG: CTRLR TEST]. Scroll through the tests and select [CTRLR: PHM] or [CTRLR: TEST ALL].

[2] Check that after selecting and doing these CONTROLLER tests that [CTRLR: SR# 748, 749, 74A, 74B, 74C, 74D] is not displayed.

[3] If the error codes are displayed, install a new CONTROLLER PRINTED CIRCUIT BOARD.

Error Code 757

[1] Access the Diagnostics and select [DIAG: CTRLR TEST]. Scroll through the tests and select [CTRLR: DSP] or [CTRLR: DSP PROM].

[2] Check if [CTRLR: SR# 757] is displayed.

[3] If error code 757 is displayed, install a new DSP PROM.

[4] If error code 757 is still displayed, install a new CONTROLLER PRINTED CIRCUIT BOARD.

Error Codes 760-773

[1] Access the Diagnostics and select [DIAG: CTRLR TEST]. Scroll through the tests and select [CTRLR: PHM] or [CTRLR: TEST ALL].

[2] Check that after selecting and doing these CONTROLLER tests that [CTRLR: SR# 760] or [SR# 773] is not displayed.

[3] If the error codes are displayed, install a new CONTROLLER PRINTED CIRCUIT BOARD.

Error Codes 800 - 857

[1] Access the Diagnostics and select [DIAG: CTRLR TEST]. Scroll through and select [CTRLR: TEST ALL].

[2] Check that after selecting and doing [CTRLR: TEST ALL] that no errors [CTRLR: SR# 800 - 857] are displayed.

[3] If the error codes are displayed, install a new CONTROLLER PRINTED CIRCUIT BOARD.

Error Codes 900-930, 90B, 91B, 92B, 93B, 94B

[1] Access the Diagnostics and select [DIAG: CTRLR TEST]. Scroll through and select [CTRLR: TEST ALL].

[2] Check that after selecting and doing [CTRLR: TEST ALL] that [NO ERRORS] are displayed.

[3] If the error codes are displayed, install a new CONTROLLER PRINTED CIRCUIT BOARD.

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THERMAL HEAD and HEAT SINK (Printing) Safety

This is a low voltage area.

THERMAL HEAD and HEAT SINK (Printing) Functional Description

The THERMAL HEAD is the part of the printer that prints the image. The THERMAL HEAD transfers heat in the form of pulses into the DONOR material, which then transfers its dye into the RECEIVER material. This process occurs 4 times for the 4 DONOR colors (yellow, magenta, cyan, and laminant) to make the complete image.

The THERMAL HEAD is moved into the correct position by the THERMAL HEAD LIFT MOTOR and SHAFT/CAM. The correct positions are detected through the use of 2 SENSORS that monitor the position of the THERMAL HEAD.

The THERMAL HEAD moves into 3 positions during the print and idle states:

- RETRACT
  - This is the position of the THERMAL HEAD during the READY and any idle state.
- LOAD
  - This is the position of the THERMAL HEAD when the RECEIVER is picked and rewound.
- ENGAGE
  - This is the position of the THERMAL HEAD when it is in contact with the PLATEN ROLLER of the ROLLER ASSEMBLY. The print cycle occurs in the ENGAGE position.

The THERMAL HEAD and HEAT SINK includes the THERMAL HEAD, HEAT SINK, THERMAL FUSE, HEATER, PRINTED CIRCUIT BOARD (2 EEPROMS containing data) and THERMISTOR. The THERMAL HEAD includes the resistive elements (pixels) that transfer data. The HEATER is used to heat the THERMAL HEAD to the correct operating temperature. The FUSE senses the changes in temperature and as the maximum range is exceeded, the FUSE will open to prevent overheating. The THERMISTOR also senses changes in temperature. The changes from the THERMISTOR are fed back to the ANALOG-to-DIGITAL CIRCUIT (A/D). The A/D circuit energizes the HEATER or FANS to maintain the temperature in the correct range.

THERMAL HEAD and HEAT SINK (Printing) Tools

Table 72 THERMAL HEAD and HEAT SINK (Printing) Tools

Part Number	Description
TL-3190	ELECTROSTATIC DISCHARGE PORTABLE FIELD SERVICE KIT
TL-3386	DIGITAL VOLT METER, *Fluke* Manufacturing Co., #77

THERMAL HEAD and HEAT SINK (Printing) Specifications

Table 73 THERMAL HEAD and HEAT SINK (Printing) Specifications

Description	Voltage/Resistance
THERMAL HEAD	11.4 - 15.7 V DC
THERMAL HEAD HEATER	≈ 12 V DC
THERMAL HEAD LIFT MOTOR	≈ 10.5 V DC
THERMAL HEAD FUSE	1 Ω or less
THERMAL HEAD FAN	≈ 12 V DC
THERMISTOR	10 ± .5 K Ω

THERMAL HEAD and HEAT SINK (Printing) Preliminary Check

[1] De-energize the printer.

[2] Check that the POWER LEDs are illuminated.

[3] Seat all CABLES on the CONTROLLER PRINTED CIRCUIT BOARD and THERMAL HEAD.

[4] Do the CONTROLLER ENCLOSURE and DRAWER ASSEMBLY Access procedure on page 7-25.

THERMAL HEAD LIFT MOTOR Error Codes 700, 701, 702, and 703

[1] Access the Diagnostics and select [DIAG: HEAD TEST].

[2] Scroll to [DIAG: RETRACT], [DIAG: LOAD] or [DIAG: ENGAGE].

[3] Select [DIAG: RETRACT], [DIAG: LOAD] or [DIAG: ENGAGE].

[4] Check that the THERMAL HEAD moves.

[5] If the THERMAL HEAD moves in all 3 positions, go to the THERMAL HEAD LIFT SENSOR Error Codes on page 15-4.

[6] If the THERMAL HEAD does not move, go to the next step.

[7] Set the DIGITAL VOLT METER to dc voltage.

[8] Connect the red PROBE to TP3, PIN 2.

[9] Connect the black PROBE to TP4, PIN 6 (GROUND).

[10] Select [DIAG: LOAD], [DIAG: ENGAGE], or [DIAG: RETRACT].

[11] The DVM should read ≈ 10.5 V DC.

(a) If the DVM does not read ≈ 10.5 V DC, install a new CONTROLLER PRINTED CIRCUIT BOARD.

(b) If the DVM does read ≈ 10.5 V DC, go to the next step.

[12] Connect the DVM to PINS 1 and 2 on CONNECTOR P1.

[13] The DVM should read ≈ 10.5 V DC.

(a) If the DVM does not read ≈10.5 V DC, install a new CONTROLLER PRINTED CIRCUIT BOARD.

(b) If the DVM does read ≈ 10.5 V DC, install a new MOTOR BRACKET ASSEMBLY.

THERMAL HEAD LIFT SENSOR Error Codes 700, 701, 702, and 703

[1] Set the DVM to DC voltage.

[2] Connect the red PROBE to TP4, PIN 2.

[3] Connect the black PROBE to TP4, PIN 6 (GROUND).

[4] Access the Diagnostics.

[5] Select [DIAG: RETRACT], [DIAG: LOAD], and [DIAG: ENGAGE].

[6] The DVM should read ≈ 5 V DC and go low to ≈ 0 V DC as the THERMAL HEAD moves into the RETRACT, LOAD, and ENGAGE positions.

[7] Do steps 1 to 6 again using TP4, PIN 1.

[8] If the voltage changes from 5 V DC to 0 V DC, install a new CONTROLLER PRINTED CIRCUIT BOARD.

[9] If the voltage does not change, install a new THERMAL HEAD LIFT CABLE and/or THERMAL HEAD LIFT SENSOR.

Error Code 730 (Cooling Malfunction)

[1] Access the Diagnostics and scroll to [DIAG: HEAD TEMP].

[2] Press and release the SET-UP/SELECT BUTTON; the LCD will read [TEMP: FAN].

[3] Press and hold the SET-UP/SELECT BUTTON; the LCD will read [ADC OUTPUT: ___]. This will energize the 4 THERMAL HEAD FANS. The ADC output should decrease as the FANS continue to operate.

[4] If the FANS are operating, go to step 17.

[5] If the FANS are not operating, go to the next step.

[6] Set the DVM to DC voltage.

[7] Connect the red PROBE to TP5, PIN 4.

[8] Connect the black PROBE to TP5, PIN 1.

[9] The DVM should read ≈ 12 V DC when the FANS are being operated by Diagnostics.

[10] If the voltage is not present, install a new CONTROLLER PRINTED CIRCUIT BOARD.

[11] If the voltage is present and the FANS do not operate, go to the next step.

[12] Connect the DVM to P2, PINS 9 and 10.

[13] Use the Diagnostics to operate the FANS.

[14] The DVM should read ≈ 12 V DC.

[15] If the voltage is not present, install a new CONTROLLER PRINTED CIRCUIT BOARD.

[16] If the voltage is present and the FANS do not operate, install a new FAN BRACKET HARNESS ASSEMBLY and/or FAN BRACKET ASSEMBLY.

[17] De-energize the printer.

[18] Disconnect P5 (THERMAL HEAD DATA CABLE).

[19] Set the DVM to Ω.

[20] Measure the resistance across CONNECTOR P5, PINS 3 and 4.

[21] The DVM should read 10 ± .5 K Ω.

[22] If the resistance is not 10 ± .5 K Ω, it may be necessary to install a new THERMAL HEAD.

Error Code 733

[1] Access the Diagnostics and scroll to [DIAG: HEAD TEMP].

[2] Press and release the SET-UP/SELECT BUTTON; the LCD will read [TEMP: FAN].

[3] Press the CANCEL BUTTON to scroll to [TEMP: HEATER].

[4] Press and hold the SET-UP SELECT BUTTON; the LCD will read [ADC OUTPUT:___].

(a) If the HEATER LED is illuminated and the ADC output increases on the DISPLAY, the circuit is operating.

(b) If the HEATER LED is not illuminated and the ADC output does not increase, go to the next step.

[5] De-energize the printer.

[6] Set the DVM to Ω.

[7] Measure the resistance on TP6, PIN 3 to TP6, PIN 6.

(a) If the resistance is open (> 2 Ω), install a new FUSE.

(b) If the resistance is 1 Ω or less, go to the next step.

[8] Energize the printer.

[9] Set the DVM to DC voltage.

[10] Connect the red PROBE to TP6, PIN 5.

[11] Connect the black PROBE to TP6, PIN 1.

[12] The DVM should read ≈ 12 V DC when the Diagnostics have energized the HEATER.

(a) If voltage is not present, install a new CONTROLLER PRINTED CIRCUIT BOARD.

(b) If voltage is present, install a new THERMAL HEAD HEAT SINK ASSEMBLY.

Error Code 719

[1] De-energize the printer.

[2] Seat the THERMAL HEAD DATA CABLE at P5 on the CONTROLLER PCB and at the THERMAL HEAD CONNECTOR.

[3] Energize the printer.

[4] If error code 719 is not present, check the operation by making a test print.

[5] If error code 719 is present, go to the next step.

[6] De-energize the printer.

[7] Disconnect P5.

[8] Install a new THERMAL HEAD DATA CABLE.

[9] Energize the printer.

[10] If error code 719 is not present, check the operation by making a test print.

[11] If error code 719 is present, install a new THERMAL HEAD HEAT SINK ASSEMBLY.

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Lead Edge/Trail Edge

Lead Edge/Trail Edge - Lead edge is the edge of the image that is printed first and exits the printer first. Trail edge is the end of the image that exits the printer last.

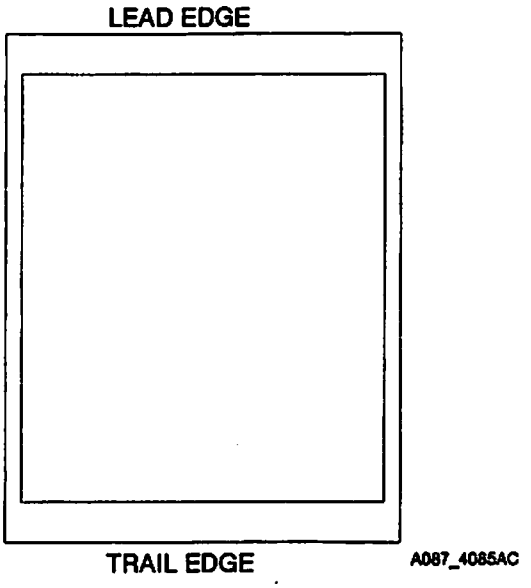


Figure 187 Lead Edge and Trail Edge

Lead Edge Fold

Lead Edge Fold - Lead Edge Fold only occurs on reflective material. It is a colored streak or fold starting at the lead edge of the print. The fold is caused by the folding of the DONOR starting in the previous patch and continues into the next patch. Normally, the patch where the fold starts is of higher density. The fold can be observed in the used DONOR.

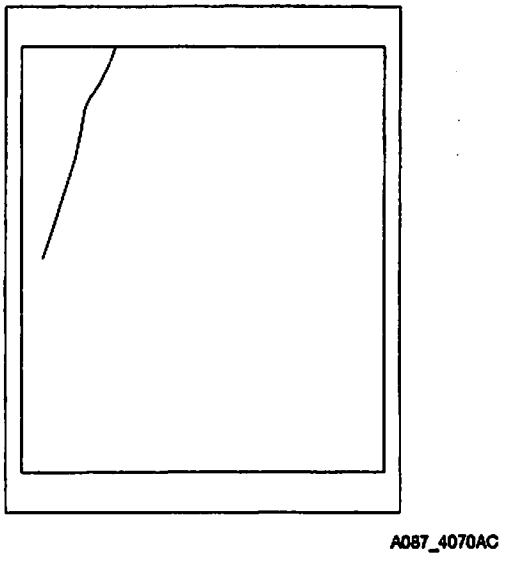
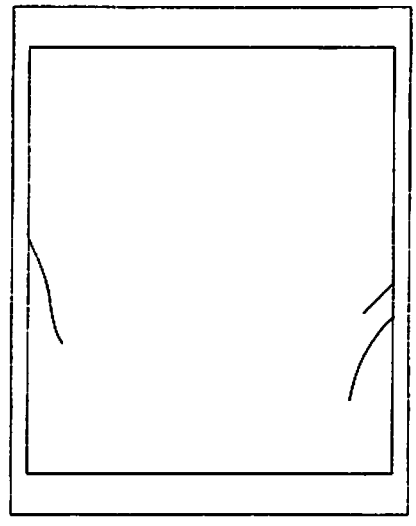


Figure 188 Lead Edge Fold

Side Edge Fold

Side Edge Fold - Side Edge Fold only occurs on reflective material . The folds start at the edge of the image caused by excessive wrinkling between the printed and unprinted DONOR borders.

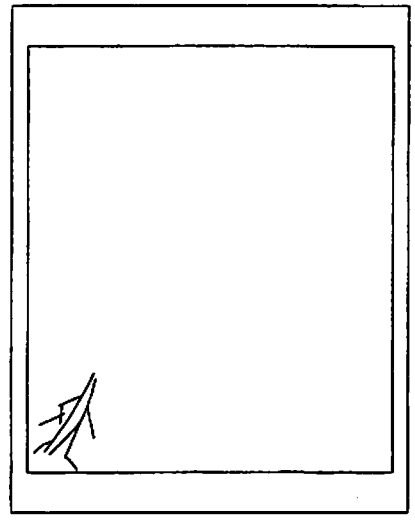


A087_4071AC

Figure 189 Side Edge Fold

Stretch

Stretch - Stretch only occurs on reflective material. Folds that look like lightning bolts. They start within the image and normally go to the bottom and toward the corners of the image branching out as they go. This occurs when there is an excessive amount of small text or lines on the image without much other density. The text becomes different colors because of the folds. This can be reduced by adding a little density to the image background. In extreme cases, even flat field minimum densities exhibit this problem.

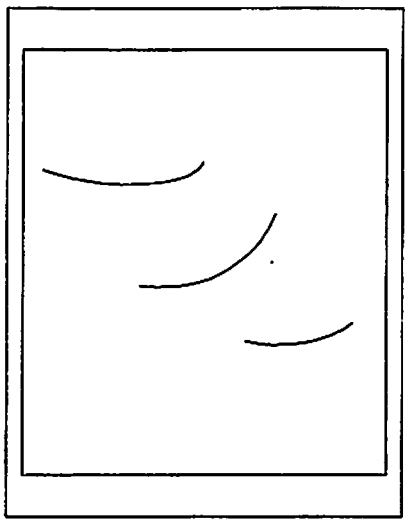


A087_4072AC

Figure 190 Stretch

Smiles

Smiles - Smiles occur on TRANSPARENCY material only. Smiles are one or more folds that occur within the image. They always occur in high density areas and go across the page. There is not much difference between one smile and many smiles.



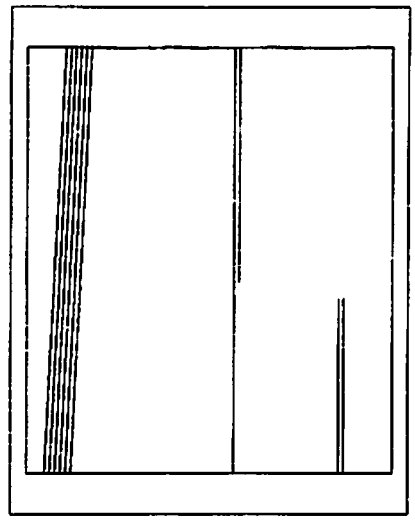
A087_4067AC

Figure 191 Smiles

DONOR and THERMAL HEAD Comb Lines (Wit Code= 1238)

Comb lines are several evenly spaced lines, 1 or 2 mm (1/64 to 1/8 inch) wide close together and alternately positive and negative density, running in the print direction. Comb lines occur in random patches lengthwise in a print and/or print to print. They are observed most often in mid-scale densities, especially in magenta or cyan images unless they were calibrated into the THERMAL HEAD, see below.

DONOR Comb lines do not necessarily run the complete length of the image. They are not of consistent density and can fade away or start within an image. They can be throughout the image. These lines are often observed in one color more than another (magenta, flesh tones, or light flat fields). The lines are sometimes at a slight angle to the image. To remove the lines, install a new DONOR ROLL.



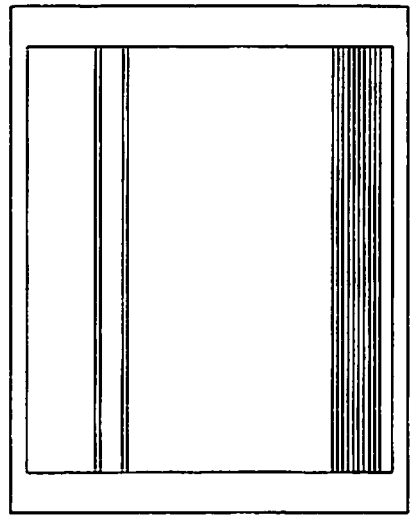
A087_4068AC

Figure 192 DONOR Comb Lines

THERMAL HEAD Comb lines are comb lines that have been compensated into the THERMAL HEAD. The lines are a result of compensating THERMAL HEADS with DONOR that has comb lines The lines run straight through the complete image and do not vary in width or density from top to bottom. They show up in every color because the calibration of the pixels was effected by the DONOR. To test for these lines, install new DONOR and see if this removes the lines. If the lines still occur, install a new THERMAL HEAD.

NOTE

The figures shown here are not intended to dictate a pattern or frequency of the lines on the images. They are an example of what the individual lines look like.



A087_4069AC

Figure 193 THERMAL HEAD Comb Lines

Paper Fold at Trail Edge

Symptom: The RECEIVER is folded 2.54 cm (1 in.) from the trail edge and/or only the yellow pass completes.

Cause: With the new UNI-TRAY, the RECEIVER and TRAY are not compatible; this might be caused if the TRAY setting selected is not correct for the RECEIVER in use.

Solution: Check that the TRAY CODE LABELS on the side of the UNI-TRAY match the the size of the RECEIVER in use.

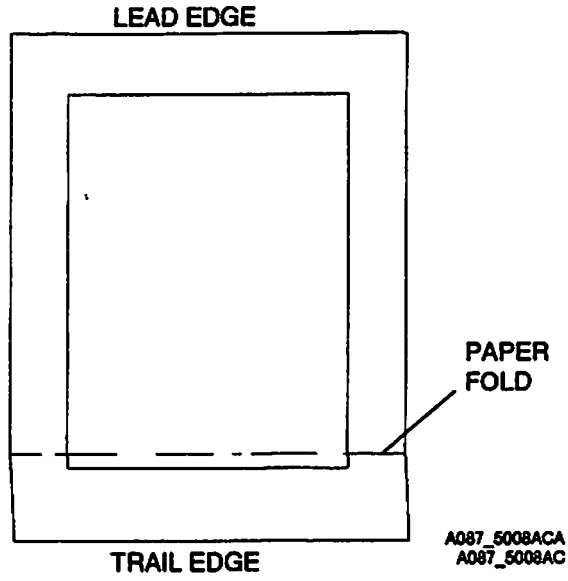


Figure 194 Paper Fold

Border Size Not Correct

Symptom: The border on the right side of the print as it exits the printer is too narrow compared to the left side of the print; the sides should be approximately the same. See the Image Placement Specifications starting on page 4-4.

Cause: The LEFT WALL on the UNI-TRAY is damaged.

Solution: Install a new UNI-TRAY.

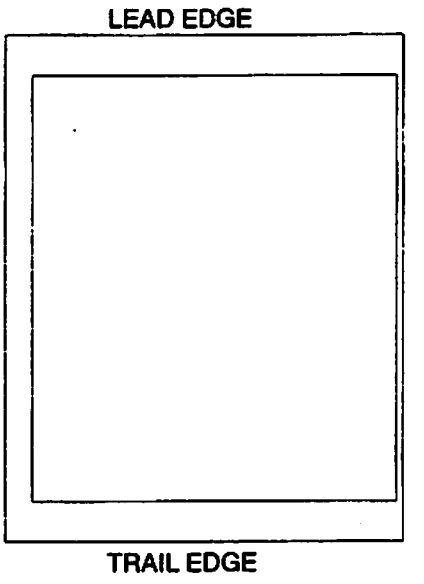


Figure 195 Border Size Not Correct

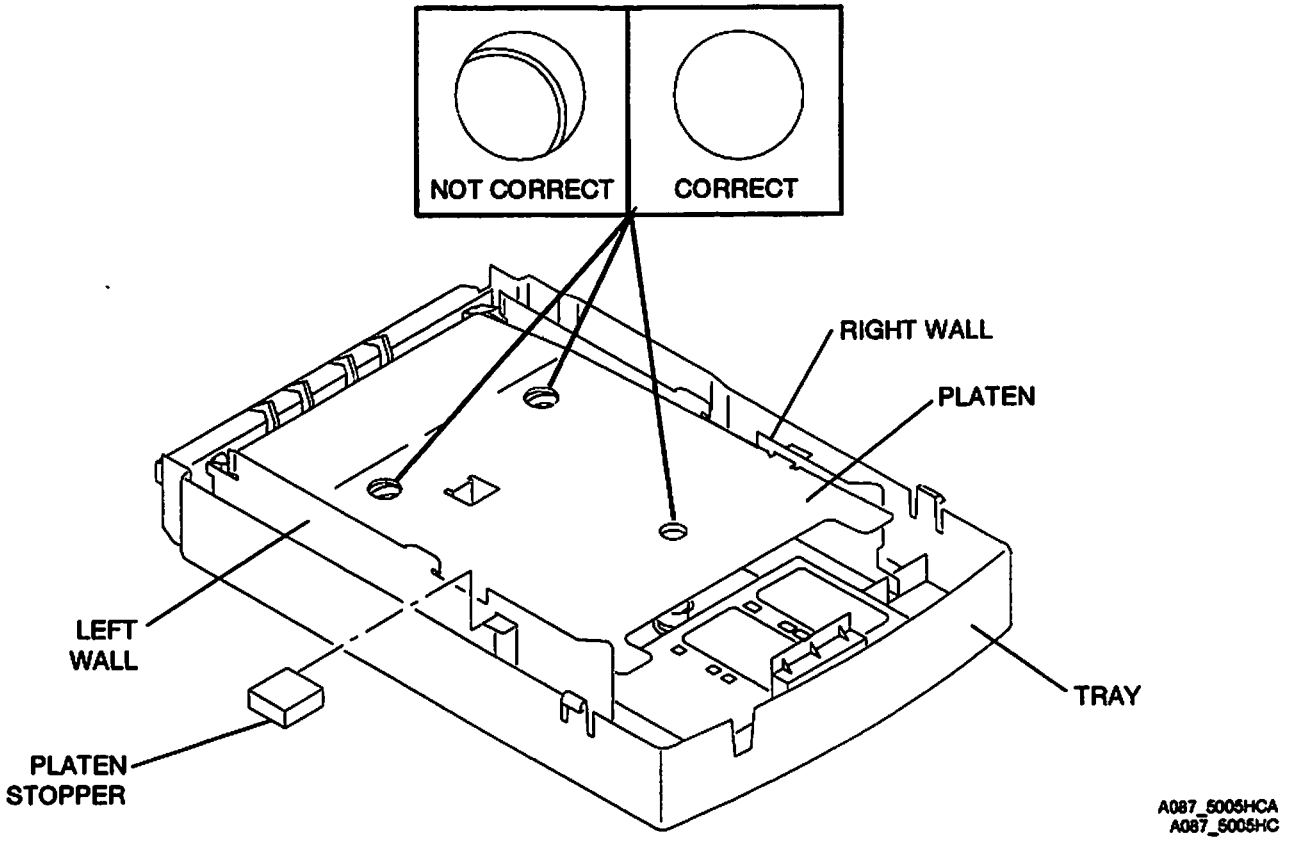


Figure 196 UNI-TRAY

Lead Edge Fold, Side Edge Fold, Stretch Appears on a Printer After Normal to High Usage

Symptom:

Lead Edge Fold, Side Edge Fold, or Strech appears on a printer after normal to high usage.

Cause:

DONOR or RECEIVER, the system has been moved by the customer, or parts malfunctions.

Solution:

[1] Check for damage to the printer.

[2] Install new DONOR and/or RECEIVER.

[3] The THERMAL HEAD might have a new configuration. Install a new THERMAL HEAD if necessary.

Lead Edge Fold, Side Edge Fold, or Strech Appears on a New Printer Just Removed From Box

Symptom: Lead Edge Fold, Side Edge Fold, or Strech Appears on a New Printer Just Removed From Box

Cause: The printer was damaged during shipment.

Conditions: The THERMAL HEAD has a tolerance of .0011 to .0022 in. over the complete useable area. If the printer experiences over 25 to 30 g of shock, the tolerance might change, which causes this artifact.

Solutions:

[1] Check the printer for shipping damage to the following areas:

- THERMAL HEAD
- DONOR SUPPLY BRACKET ASSEMBLY
- BASE ENCLOSURE WALLS
- MOTOR BRACKET ASSEMBLY
  - Do all the GEARS mesh and have the correct backlash?
- DOOR/DONOR TAKE-UP ASSEMBLY
- Check that no wires or other parts are causing an obstruction with the DONOR.

[2] Install a new roll of DONOR.

[3] If there is no obvious shipping damage, install the following new parts in the order listed below:

- THERMAL HEAD
- DONOR SUPPLY BRACKET
- DOOR ASSEMBLY

Strech, Lead Edge Fold, or Side Edge Fold Appears After Installing a New THERMAL HEAD

Symptom: Strech, Lead Edge Fold, or Side Edge Fold Appears After Installing a New THERMAL HEAD

Causes:

- DONOR or RECEIVER
- Obstructions in the DONOR path
- Adhesive from the DONOR is causing a localized stall on the THERMAL HEAD
- THERMAL HEAD not installed correctly
- The wrong THERMAL HEAD for this printer was installed; use the correct THERMAL HEAD for that PRINTER model.
- There is a THERMAL HEAD malfunction.

Solution:

[1] Install new DONOR and/or RECEIVER. See page 3-2.

[2] Clean the THERMAL HEAD. See the procedure on page 2-2.

[3] Move any wires or HARNESSES in the correct position.

[4] Install a new THERMAL HEAD. See the removal and installation procedures starting on page 7-44.

[5] Install a new DONOR SUPPLY BRACKET ASSEMBLY. See the removal and installation procedures starting on page 7-35.

Table 76 PRINTER Image Quality Troubleshooting Chart

Malfunction	Possible Cause	Procedure
Print very light	THERMAL HEAD setup	Check that the correct THERMAL HEAD is installed and that the voltage settings are correct.
	THERMAL HEAD POWER SUPPLY	Troubleshoot THERMAL HEAD POWER SUPPLY, output voltage, and POWER CABLE CONNECTION.
Scratches appear from image to image that run the full length of print, including border	Dirt on PAPER CHUTE or ROLLER ASSEMBLY	Clean the CHUTE and ROLLER ASSEMBLY.
Scratches appear from image to image that run the full length of image only	Dirt on THERMAL HEAD	Clean THERMAL HEAD; use the procedure on page 2-2, then make a test print. Install a new THERMAL HEAD if necessary.
White line running full length of image(s)	Blown pixel	Clean THERMAL HEAD; use the procedure on page 2-2, then make a test print. Install a new THERMAL HEAD if necessary.
Horizontal bands of color across complete print, a line from one color plane is missing and might appear in different spots on the print, in different planes.	THERMAL HEAD POWER SUPPLY (dropping out)	Install a new THERMAL HEAD POWER SUPPLY.
Lead edge fold (reflective only) Multi-color streak in lead edge of print - can occur when previous color patch had high density at trailing edge.	DONOR SUPPLY BRACKET	Install a DONOR SUPPLY BRACKET.
	THERMAL HEAD	Install a new THERMAL HEAD.
	DOOR ASSEMBLY	Install a new DOOR ASSEMBLY.
Side edge fold (reflective only) "Finger" of color that moves inward from the edge of the image, usually down toward the bottom of the print.	DOOR ASSEMBLY	Install a new DOOR ASSEMBLY.
	THERMAL HEAD out of tolerance	Check and, if necessary, install a new THERMAL HEAD.
	DONOR SUPPLY BRACKET	Install a new DONOR SUPPLY BRACKET.

Table 76 PRINTER Image Quality Troubleshooting Chart - Continued

Malfunction	Possible Cause	Procedure
Stretch (reflective only) Folds that look like lightning bolts or comet trails. These start within the image and branch out towards the corners. Normally occurs with areas of high density, such as text, with no background.	THERMAL HEAD	Install a new THERMAL HEAD.
Smiles (transparency only) One or more curving folds across the image in high density areas.	THERMAL HEAD needs voltage adjustment	Check the THERMAL HEAD voltage and compare to the value written on the THERMAL HEAD. If necessary, adjust the voltage down in increments of 0.1 V until the problem is removed.
Comb lines Evenly spaced lines running down the print. —Through the full image —Consistent width and density —Appears in every color	DONOR or THERMAL HEAD	Install a new DONOR ROLL and make another print. If the pattern continues, install a new THERMAL HEAD.

Table 77 DONOR/RECEIVER Image Quality Troubleshooting Chart

Malfunction	Possible Cause	Procedure
Print very light	RECEIVER condition (reflective)	Test with new RECEIVER that has been stored and handled correctly.
Print very light	RECEIVER upside down (transparency)	Check for correct orientation of TRANSPARENCY RECEIVER in the TRAY.
Lead edge fold (reflective only) Multi-color streak in lead edge of print - can occur when previous color patch had high density at trailing edge.	DONOR wrinkled on spool.	Inspect and correct DONOR winding or obvious obstruction in DONOR path. Install a new DONOR ROLL.
Side edge fold (reflective only) "Finger" of color that moves inward from the edge of the image, usually down toward the bottom of the print.	DONOR wrinkled on spool.	Check and correct DONOR winding, DONOR alignment, or obvious obstruction in DONOR path. Install a new DONOR ROLL.
Stretch (reflective only) Folds that look like lightning bolts or comet trails. These start within the image and branch out towards the corners. Normally occurs with areas of high density, such as text, with no background.	DONOR spool alignment	Correct the DONOR installation and make another print.
	DONOR	Install a new DONOR ROLL and make another print.
Comb lines Evenly spaced lines running down the print. —Random patches, varying width, density —May be at a slant —Normally more in one color than another —May fade or start within image	DONOR	Install a new DONOR ROLL.
Comb lines Evenly spaced lines running down the print. —Through the full image —Consistent width and density —Appears in every color	DONOR or THERMAL HEAD	Install a new DONOR ROLL and make another print. If the pattern continues, install a new THERMAL HEAD.

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